REFLEXIVE PROCESSES
AND CONTROL

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Vladimir E. Lepsky
RAS Institute of Psychology
Head of Laboratory of Reflexive
Processes,
Doctor of Psychology

FROM THE EDITOR

You are holding the first issue of an international journal devoted to problems of reflexion. The need for such a publication has long been obvious, as increasing number of researchers and practical workers in various areas are being involved, often quite unwittingly, in reflexive research and usage of the related system of concepts. As in psychology and sociology, so in political and military sciences, economics, and many other areas of knowledge, there is a need for objective terms in describing not only the material and physical aspect of any system but also its internal, subjective aspect, connected with the fact that its components include humans. Methods applied in the objective description of such systems along with their subjective inner lives constitute the subject of reflexive research. The specific nature of such research can be explained by the following metaphorical example. In Fig. 1 there is a house and Human X to the left of it and Human Y to the right. We take letter T to designate reality as seen by an outside onlooker who looks at the house and the two humans. Using methods of natural sciences, the onlooker can provide as complete picture of this reality as required. This description, however, will satisfy neither a psychologist nor a sociologist, who are interested not only in physical description but in the way the house is reflected by Human X and Human Y, who are looking at it from the opposite sides, and whose perception of the object can radically differ from that of the onlooker. Let's designate the pictures that lie before X and Y as

A1 = $T + Tx + Ty$

X T Y

Fig. 1
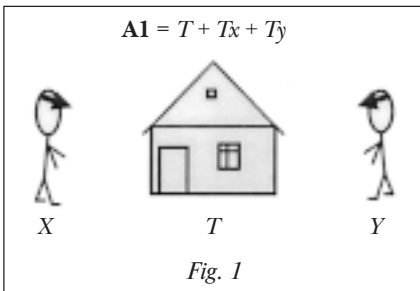
Tx and Ty respectively. Now Reality A1, which interests a psychologist or sociologist, can be designated as a symbolic sum of $T + Tx + Ty$, which is an aggregate of the physical aspect and subjective notions. Let's presume that Human X takes the position of an onlooker. Then the reality described by the symbolic sum $T + Tx + Ty$ becomes the essence of his inner life. Let's describe this as $(T + Tx + Ty)\, x$. Now the system that lies before the outside researcher is different and can be represented by the following expression: $T + Tx + Ty + (T + Tx + Ty)\, x$.

This symbolic sum depicts Reflexive System A2, which has performed an act of self-realization (Fig. 2).

The presence in the inner life of Subject X of some notions of the inner life of Subject Y allows us to set the task of establishing reflexive control (Fig. 3).

This example makes it possible to show the difference between the natural-science and reflexive approaches. Within the framework of the natural-science approach we limit ourselves to studying Reality T. Applying the reflexive approach, we are interested in the entire system of multiple reflections of this reality. It must be noted that the above deliberation depends on neither the size of the system nor the mechanism of acts of reflection. The role of the subject can be assumed by a person, groups of people, organizations, and entire countries. Separate reflections can be linked with individual psychological processes and with macro-cultural perception, which can make, for example, a country create a generalized image of itself. This diversity predetermines the inter-disciplinary character of our journal. We intend to publish articles on all aspects of reflexive systems. We are concerned with the actual analysis and consideration of concrete details of any system.

$$A2 = T + Tx + Ty + (T + Tx + Ty)x$$

Fig. 2

Fig. 3

We will appreciate support from readers and their contribution to our publications. Even before the first issue was published, we received a great deal of suggestions as to how the journal could stimulate the creation of various communities around it. We hope it will be able to carry out its function of organizer.
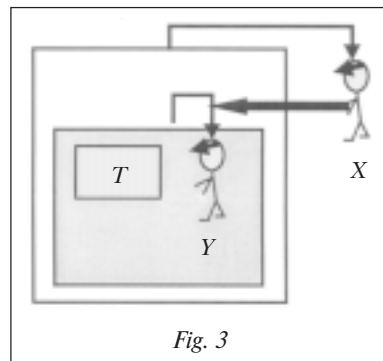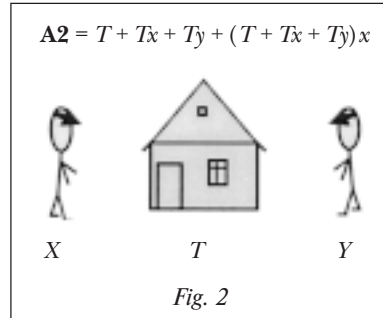
Vladimir Lepsky

SCIENTIFIC AND SOCIO-CULTURAL ROLE OF REFLEXIVE MOVEMENT IN RUSSIA

Round Table Discussion, March 5, 2001
Institute of Psychology, Russian Academy of Sciences

Initiated by the Editorial Board of our journal, the Round Table marked the birth of the new monthly interdisciplinary workshop «Reflexive Processes and Control», whose work shall be regularly highlighted for our readers. Over 70 researchers (psychologists, philosophers, sociologists, political science experts, mathematicians, managers, etc.) contributed to a vast diversity of theoretical representations considered at its proceedings. We would appreciate any suggestions regarding possible improvements in the way the seminar is organized.

V. E. Lepsky
(RAS Institute of Psychology)

Problems dealing with the scientific domain of reason are of strategic importance, for both academic research and practical applications. From a practical viewpoint, the focus of the research on reasoning will introduce the concept of «subjectivity» as a characteristic feature of social systems of control and development, and elaborate fundamentally new technologies to support the subjects (individual or corporate) of activity, with the concurrent substitution of the dominant intellectual, (reasoning-related) and other abilities.

The broad application of this approach is undoubtedly based on some original ideas of *V.A.Lefebvre*, initially developed to meet the needs of major military projects. This necessitated the creation of a methodology that would allow interdisciplinary research during the modeling of various conflicts and the search for invariant methods of modeling conflicts. Lefebvre's principal achievement is that he took the notion of reasoning out of the area of philosophy, which was highly ideologized at that time, to apply it in the field of general systemic research. That was mostly due to the introduction of the term «reflexion system». Thus the «reflexive» approach appeared, and the instrumental facilities abundantly created within its framework were validated through scientific discussions and experimental and practical work. The scientific establishment was at that time reluctant to accept many of Lefebvre's ideas. The reason had to do with the overall supremacy of the natural-science approach, which dominated research in the area of controlling complex systems. Traditional technologies relied on the functional methodologies used as the foundation of the «operations research». By contrast, Lefebvre's ideas were based on structural-functional approach.

Today, the situation has radically changed. The apparent crisis of the approaches traditionally used to design and control complicated, multi-component systems (social systems, first of all) has become generally recognized. The time has come for the reflexive approach to establish itself as a new priority.

Considering *the great impact the reflexive approach has increasingly had on psychology in recent years, we* should emphasize that this has primarily been prompted by the development of the subjectival-activitistic approach. In this respect, we must mention the influence of the seminal writings of S.L. Rubinstein and the principal orientation of the Institute of Psychology, RAS (A.V. Brushlinsky and some others) on the development of the subjectival-activitistic approach.

Many an example may be cited to show the increased role of the *reflexive approach* in *the integration of humanities with natural sciences* notably, synergetics *(S.P. Kurdyumov, G.G. Malinetsky, and others)* a new and promising trend of integration of different scientific contexts; some new ideas and technologies enabling scholars and «mathematicians» to join their efforts; mathematical visualization of reflexions (A.A. Zenkin); autological modeling of complicated systems (Yu.P. Shankin); and synthesis of different scientific fields versus logical inference generation procedures (D.A. Pospelov, V.K. Finn, T.A. Taran) .

Special mention should be made of breakthrough areas in the practical application of the reflexive approach: these primarily involve problems of supporting business management in computerized environments (the subject-oriented concept of V.E. Lepsky and studies by V.I. Maksimov, E.G. Grigoryev, I.P. Beliayev, and others), and to education procurement (as presented by the Davydov school, works by V.V. Rubtsov and I.N. Semionov, analysts of G.P. Schedrovitsky's and of some other schools of thought).

In recent years reflexion-related terminology and methods of reflexive analysis have been increasingly used in psychotherapy (V.A. Petrovsky, V.M. Rozin, and some others), ecological psychology (V.I. Panov and others), and information (informational psychological) security to reveal the negative manifestations of political PR-campaigns, totalitarian sects and the mass media (V.E. Lepsky, A.M. Stepanov, and some others). Works dealing with problems related to the controlling and developing of society are characterized by the much wider use of the reflexive approach in the creation of new models of strategic management, team functioning, etc. than ever before (see, for example, organization-activity games by G.P. Schedrovitsky and his followers; O.S. Anisimov's approach to strategic thinking and strategic management; and the views postulated by V.E. Lepsky and A.N. Raikov on «strategic congresses»).

The fact that the Round Table was attended by scholars representing a wide variety of scientific fields and schools shows that the ideas submitted for discussion are supported by the advent of new reality.

A.V. Brushlinsky
(RAS Institute of Psychology)

First of all, I would like to discuss such aspects of the problem under consideration as reflexion and reflexive processes and control, as revealed in the course of the Institute's theoretical and empirical research. They will be presented primarily from the psychological and, to some extent, philosophical viewpoint.

In his opening address, V. E. Lepsky pointed out that there are many scientific schools and concepts that study, analyze, consider, criticize, and accept various aspects of reflexion, reflexive processes, and the related problem of control.

In psychology, reflexion is considered as an integral part of consciousness, thus it serves as constituent of fundamental importance; moreover, it can, in some measure, be regarded as the highest level consciousness can attain in the course of its development. In this capacity reflexion, in its various interpretations, has been widely used in psychotherapy both in this country and abroad.

As regards the psychological and philosophical concepts proper, I would single out the subjectival-activitistic theory touched briefly on by V.E. Lepsky. This concept stems from the studies of S.L. Rubinschtein and his pupils and followers. As regards G.P. Schedrovitsky, he and his numerous followers laid claim to having elaborated a specific scientific discipline but he never considered himself a «pure» psychologist, being more of a logician or methodologist.

I.N. Semyonov and his staffers and many other researchers have been working hard in psychology. Much consideration is given to reflexion in the writings of V.V. Davydov and his team and in the work of the RAS Institute of Psychology as a whole.

A theme or, perhaps, *the* theme of primary importance to the Institute is that of the psychology of the subject. From my point of view, no subject can come into existence by any means other than a combination of such specific properties as activeness, integrity, and self-sufficiency. No one can be born a subject; one can only evolve into being it. Any individual or a group of individuals can *become* a subject, as , sooner or later, humanity as a whole will do through the formation of common interests, objectives, and tasks.

Activeness is the measure of the highest level of the activity of the subject. Neither the subject nor his activities can exist without consciousness and reflexion, thus making all constituents of this system of relationship inseparably inter-connected. By the example of, first and foremost, cogni-

tion and its particular component of psychology of thinking, two aspects of reflexion can be seen explored in the most systematic and distinct manner, these are the individual and «procedural» ones.

Personality approach should be identified as part of a broader – subjectival – one. It is of crucial importance as far as a human being is concerned. Essentially, it directly concerns human motivation and capabilities, including the intellectual ones. And where there is a motivation there must be a goal. Generally speaking, anything within the realm of the conscious entails issues related to motivation, capabilities, reflexion, etc.

The individual aspect of thinking manifests itself mostly at the level of consciousness, first of all, at the level of reflexion. As distinct from the individual aspect, the procedural one primarily reveals itself at the level of the unconscious. I place emphasis on this circumstance to spell out once again that the conscious can never be present unless it is accompanied by the unconscious, which is especially true for reflexion. Having no reason, that is the ability to reflect, animals do not have the unconscious.

Animals have nothing but psychics. When a human being is born, he initially manifests himself with the simplest psychical reactions, which in time differentiate into the conscious (specifically, reflexion) and the unconscious. As mentioned above, where there is reason there is the unconscious, and, therefore, where there is reflexion there is the unconscious. And, conversely, wherever the unconscious may exist, there is reflexion and the underlying conscious. Thus, this dual category of the conscious (in particular, reflexion) and the unconscious is extremely important for a proper understanding of the subject and his actions. Since reasoning is an inseparable unity of the conscious and the unconscious, intuition is also essential at the level of the unconscious. I emphasize my disagreement with a number of works on reflexion that regrettably overstate the role of reflexion and understate that of intuition as well as of the unconscious in general. In broader terms this implies the understatement of the role of activity: if there is no activity, there is no reflexion, even in its most primitive form, or the conscious in general.

We have studied the problem of intuition in experimental work (conducted together with Ms. Senguziyeva, a post-graduate student) to show how reflexion, as interaction of the conscious and the unconscious, is generated and developed. Thus, although it is in a sense limited to the conscious, the very process of making an inference or opening a new property or aspect lies largely within the domain of intuition, and, therefore, of the unconscious, while reflexion, which is only minimally present up to that point, will be fully involved at the subsequent stages.

Let us also mention the area of artificial intelligence, where spectacular results have been achieved: it will suffice to mention the chess-playing

software that defeated Garry Kasparov. In his comments published on the Web, Kasparov explained the reasons of his failure. Human mentality during a chess game, he said, is characterized by the utmost flexibility, mobility, and variability. These are the immanent characteristics of any procedure, and since reasoning is a process, it is also characterized by the utmost flexibility, plasticity and variability, whereas software, sophisticated as it may be, will never match the flexibility of reasoning displayed by a human being and is, therefore, less mobile. So Kasparov built his strategy on the conviction that the intellectual capacity of a computer is insufficiently flexible and plastic. So, when at the most decisive moment of the game, the computer made a move that came as a complete surprise, Kasparov decided that some human chess players had secretly intervened and taken the computer to a new level of game. Although debatable in terms of possible causes of the defeat, this explanation gives a correct picture of the relationship between artificial intelligence and a human being.

I regard the understatement and overstatement of reflexion as equally negative. While the very fact of having this seminar proves that reflexion is not likely to be understated, one must be careful not to overstate it, thus moving from one extreme to the other and disregarding the unconscious, first of all, the activities carried out by a subject. Avoiding these extremes, we can achieve tangible results in our further research into the problems of reflexion.

V.I.Panov
(Institute of Psychology, RAE) First of all, reflexion, at least as it is presented in the research done by our Institute, is distinguished as a principle of cognition and a principle of development. Second, reflexion always presupposes the splitting or disintegration of one's self. This self-disintegration makes it possible to build a relationship with my own self as with another person and thus create another form of my being as another form of the self-existence of certain universal principles, say, of thinking, whose carrier I am as subject of reflexive act.

What areas of psychology are studied by the Institute with the use of reflexion as a method of analysis and what are the subjects of this study ? That reflexion is a method of thinking is self-evident. We know the position concerning the empirical type of generalization as defined by Menchinskaya and the theoretical type of generalization stated by V.V. Davydov. However, not all researchers fully appreciate the contribution made by Davydov, who not only changed the subject matter of teaching but introduced thinking as the subject matter according to the theoretical type of generalization.

In this case the attitude of a teacher changes fundamentally: the teacher can no longer afford the subject-to-object pattern of the traditional way

of teaching, when teaching is defined as a transfer of the cultural-historical methods of human activity from person to person or from generation to generation. It is not a transfer of readily available knowledge from one, less active, subject to another who accepts or rejects this knowledge according to his capacity. The teacher is no longer a subject who relays knowledge but a subject who organizes activities shared among the students or among the students and himself or carried out individually. Consequently, the type of interaction changes into subject-to-subject pattern since, as above-mentioned, wherever a subject appears, reflexion appears as well.

The teacher has to split the situation of societal-cognitive interaction to identify what may be liable to comprehension, and to determine the means required to provide this comprehension. But it may eventually turn out to be insufficient. You can often hear: «We adhere to the person-oriented form of teaching, we practice the subject-to-subject type of interaction». As a joke goes, a professor, tired of giving the same lecture over and over again, brought a player, turned it on, and left the room. When he showed up for the next lecture, the room was empty with a tape recorder sitting on each student's desk. This is how the object-to-object type of tuition operates.

Therefore, there is little point in involving any of the types of interaction – object-to-object or subject-to-object or subject-to-subject. One should add one more type, the subject-generating. For, as is obvious according to Davydov, there is not only a necessity for subjects to interact, but also a necessity for a joint subject to make a joint effort in the inter-subject relation space in order for interaction to occur. This is equally true for any team, be it a soccer team or a presidential team.

This reflexive approach has been applied by the Institute of Psychology to inquire, primarily, into the psychological mechanisms of teaching, which has prompted a logical chain: traditional teaching aimed at developing the learning process in which the subject matter of learning ceases being an end and becomes a means to develop the pupil's ability to study or engage in any other activity. Now we have advanced even further: there appears the notion of an education that develops pupils' abilities. Such education not simply provides a method or creates a situation of interaction, it provides conditions necessary for the creative nature of one's mental development to reveal itself through, as an instance, educational situations. The reflexive approach has been also applied to environmental psychology, that is reflexion as the principle of integration based upon some general foundations. It incorporates certain branches of psychological ecology, psychology of environment, extreme psychology, and environmentally-conscious psychology. Essentially, this block of knowledge has been systematized and integrated by us as a relationship between humans and the

environment and between the social and natural environments. Here, again, we see the same structure: the subject of environmental psychology will vary depending on the type of interaction – object-to-object, subject-to-object, subject-to-subjectl, or subject-generating.

Another area is talent as a reality, realized or unrealized. This requires the introduction of another block in the analysis needed to verify the underlying assumption of a subject being talented. Finally, we come to the most important block of analysis, the one involving the reflexive approach, the determination of psychics as the object and the subject of exploration.

G.P.Smolian
(RAS Institute of System Analysis)

My vision of Lefebvre's achievements is different from what was described by V.E. Lepsky. That was the reason why this summary was entitled «Some Notes, Subjective As They Are, on the Margins of an Unwritten History of the Reflexive Movement», for I am not quite aware of what the so-called reflexive movement is, and, therefore, adopt this term conditionally. I'll start with citing some aphorisms by Nietzsche and will address the Talmud in the end.

Aphorism One: «What is originality? The ability to see what has not been named yet, what cannot be named yet, though it is in everyone's view. Humans routinely take notice of a thing only when they know its name. Eccentric people usually belong to those who give names to things».

Aphorism Two: «The more signs a man devises, the deeper his self-consciousness».

Both V.A. Lefebvre and G.P. Shchedrovitsky have fitted into the definition offered by Nietzsche, since they have attached names to things that had been unnamed. For objectivity's sake I should note that Shchedrovitsky did this after Levebvre, when he searched for the way out of the «blind alleys» of the informal logic he was developing.

Shchedrovitsky used his own graphical language to depict reflexive processes in the broadest context of thinking and explained mostly his methodological approach. Lefebvre devised a language to describe separate objects and actions these objects are subjected to (*reflexive games, reflexive control)*, even though he chose to call them «subjects» in order to conveniently incorporate them into the context of reflexive control or a reflexive game. Odd though it may seem, he was largely a carrier of cybernetic rather than psychological thinking with its notions of «black box», «system», «control», «function», «model», etc. They both were remarkably good at drawing squares, ovals, and circlets with a manikin inside (although those drawn by Lefebvre looked more dynamic).

Having received names, fragments of knowledge become «frozen» and "inviolable", to quote from De Bono. And we have to consider the world

built of names like of bricks which have to be «broken into» to be explored in order to make it easier for us to understand the whole. As follows from his work on the underlying logic of reflexive games and reflexive management, Lefebvre found in the late 1960s an elegant method of «breaking into» reflexive structures in order to explore them. He contrived a very simple device to formally present and depict them and showed a wide range of applications of these images and depictions.

Apart from some ideas, trivial as they are, borrowed from the operations research to designate actions performed by subjects during a reflexive process, Lefebvre found a method to present the essence of this process in a more precise way by arranging several mirrors opposite one another. Thus, he evidenced the objective necessity of not only giving «reflexive» notions names but of presenting their images. After that things took their natural course: depending on the frequency of the use of these concepts in a certain concrete social group and in full correspondence with the Zipf law, the professional language of the contemporary reflexive movement began to be shaped.

The pictorial language offered by Lefebvre proved to be well suited for the use of algebraic polynomials employed to record reflexive processes or operations performed on reflexive structures. However, this was not its sole virtue. The new language also made it possible to simplify the very process of cognition of reflexive processes and reflexive systems without simplifying these processes and systems, which was fully consonant with Ashby's principle: «Making models is freeing the system from excessive information». Having portrayed reflexive interaction between structures as initially subjectless, Lefebvre opened up a whole range of new opportunities for filling reflexive models with any information that is not excessive for solving practical problems.

They say that there is the successful practice of implementing the behavioral models of reflexion, for example, in criminal proceedings, PR events, and military planning, which confirms their heuristical strength and practical value. However, this has yet to be proved. But this does not matter. What really matters is the very possibility of building reflexive polynomials and initial images, specifying and processing details.

In conclusion, I would like to share some observations I made at the symposium on reflexive control held last October. They deal with criticism concerning contrasting the views of Lefebvre and George Soros. In making the first attempt to describe the ontology of reflexive processes, Lefebvre restricted his study to the area of conflicting structures. This ontology can be easily traced to the initial notation of «studying systems compatible with the researcher by perfection». In situations described by means of reflexive models, the researcher's actions influence the object under study, chang-

ing its behavior. To explain this influence, there was no need for Lefebvre to resort to any information notations. These appeared later, with the development of reflexive control schemes.

As for G. Soros, he did not read the works by Vladimir Lefebvre. As stated by Soros himself, his starting point was Karl Popper's concept of imperfect comprehension. A successful financier, Soros, in order to have this disequilibrium (or imperfection) balanced (first and foremost, to his own benefit), tends to perceive decision-making systems as ones of double feedback. These systems' ability to perform actions that can influence comprehension was described by Soros, without giving much thought to it, as reflexivity and was applied to describe the behavior of economic agents. As was the case with the early work of Lefebvre, Soros felt no need for information either circulating in the system or reflecting a person's internal world. «On the one hand», he writes in the «Alchemy of Finance», «the participants are endeavoring to gain an understanding of the situation they are involved in, while, on the other, such understanding, once it is attained, serves as a basis for making decisions, and these, in turn, influence the course of events».

Thus, the two roles interfere with each other.» Such is, in fact, his overall interpretation of imperfect comprehension. Although G. Soros pretends to have little concern about other realia, except for thinking and actions, he does raise the question of situational uncertainty and of description of a situation in informational terms when he begins to illustrate his inferences, arguing that agents of economic behavior fail unless they possess relevant information.

A simple comparison between the starting points in Lefebvre's and Soros's respective patterns of comprehending the nature of reflexive processes shows that though they use different key words they both proceed from the same (experimental) results of research on the objects having the property of reflexion. But the similarity ends here. From this point their views began to differ substantially. Lefebvre went far beyond the methods of reflexive management, which are based on transference of information. He arrived at the non-informational grounding of the reflexive nature of an ethical choice and imparted it with a meaningful designation. As for Soros, he remained at the level of the initial informational notions, though he made progress in describing the driving forces of economic behavior – preferences and habits of participants.

All attempts to assess the significance of reflexion-related problems for the scientific or cultural development of this country (as well as the United States) are inseparably connected with Vladimir Aleksandrovich Lefebvre.

And now from the Talmud : «The text of what is studied is forgotten. But the process of study is purifying by itself.»

Even if Vladimir Lepsky publishes this text, it will be forgotten. But this *Round Table* will carry out its purifying mission.

Finally, I would not like the reflexive movement to become synonymous with anything that may get into the notion of «the anti-technological» or be manipulated into pretending to being a new scientific ideology for «saving Russia».

V.A.Petrovsky
(Russian Academy of Education)
I'm astonished to hear many researchers discoursing upon personality, communication, the conscious, the self-conscious, and even reflexion in such a manner as if Lefebvre's theory has never been developed at all. It is necessary, which is, in my opinion, obvious, to popularize the reflexive theory. At the same time, it is necessary to undertake a detailed logico-semiotic analysis of the theory itself.

In my view, two problems should be singled out here. One has to deal with the congruence of symbolic rows with textual (lexical) ones within reflexive structures. There are, essentially, three languages in the Lefebvre reflexive theory. These are: the formal language of symbols designed to define the relationship between them in logico-mathematical terms; a metalanguage to please us, and, finally, a kind of intermediate language. The latter can be described as one allowing formalization or even appealing to it but not yet realized as such. This language is between the language of the formal theory and metalanguage. Indeed, any attempt to formalize «every Tom, Dick and Harry» would, if applied to the area under consideration, turn out none other than a methodologically paranoid requirement of having the interstitial language absolutely coincident with the formal one. However, sometimes I do have the feeling that an interstitial language (typically called «marginal») is a bit overused, and this may hinder an understanding of the basic, formal language. Another dangerous implication is that such overuse, when found in a situation that involves popularization of a theory, may result in oversimplifications with disastrous results as it happened with the ideas of E. Bern, the genius who created the transaction analysis. I refer, in particular, to refinements of the methods applied to describe, in a language of symbols, the state of a reflexive system and that of the operators of cognition, as undertaken within the context of «discerning» the world picture from the viewpoint of an external and internal observer. Precisely, I want to emphasize that the due congruence between symbols used in texts and their lexical explanation has not yet been achieved.

Here is an excerpt from Lefebvre's *Conflicting Structures:* «... Presume two members to exist: Tx and Txy. Also assume that character Y can be reflected adequately, as Tx, and in a fundamentally inadequate way. Symbols can only register the very fact of the existence of such a member in the

internal world of the character Y. Therefore, *to apply symbols and in applying symbols, one will have to involve a commentary* (italicized by the author) *to deal specifically* with the degree of adequacy as assessed from the viewpoint of the external observer» (p. 15). Then, one essential question arises: is it possible to make do *without* any special commentary, supplying, instead, some additional operations – as I have shown above (V.A. Petrovsky, Ibid.). Although the wording to be thus generated is more complicated than it would be if the symbol were preserved, it will cast more light, and with a higher degree of precision, on the internal world of X, for one, it allows reflecting the existence of one observer in the internal world of the other.

A second problem is that the ontological status of what is named by Lefebvre «the state of the reflexive system» should be cognized and symbolically fixed. By way of example, let us consider the state of the reflexive system that can be written as $T + Tx$. What can be meant by this expression from a philosophical point of view? In my opinion, it adequately outlines what may be called «unity» as applicable to the uniform system of a stative process and its content, irrespective of whether reflexion, or contemplation/mediation, or sensation, etc., is concerned. To generalize, we deal here with the relationship of the subjectival and the objectival, which is a certain defined system featured by a fundamental inner unity and constituting an integral whole.

Which philosophical category could better remind us of itself in this context? It seems to me to be Hegel's *Idea*, that is, the unity of a notion and the underlying objectivity (that of the wordy description of the object under reflexion and the object proper; a pulsation of transient states in between the reality and mental «replication» of the same).

Such an interpretation of Lefebvre's structures might appear to be quite heuristic for the mentality of «the Self». If we look at the Self within the above construction, we shall find that it lends itself to being generalized as *an idea of the self inherent in the individual,* or, essentially, *the reflexion of the individual himself.* One may express this postulate lexically as well as graphically. Here we specifically talk of an individual who is susceptible to being legitimately qualified as the subject, object, and carrier of the act of reflexion (to generalize, as the source of reflexion) and, simultaneously, as the result, image and yield of reflexion (or, more generally, as the content of reflexion).

Here one question is in order: is there a sign, or representation, with which the dynamic unity of the objectival and subjectival aspects of *the Self* could be explicated? The answer will be «Yes, there is». Such a sign (named by us «live») is Nekker's cube (fancy a cube that is literally full of motion, that is moving before your eyes, turning itself «inside out»: the remote, «obscured», sides will alternately come in the foreground and recede). Here,

the cube's sides interchanging their position symbolize what is termed «objectival» and «subjectival». Thus, Nekker's cube could be substituted for «+» in expression $T + Tx$.

Returning in conclusion to the above thesis that a necessity has arisen for the reflexion theory to be not only popularized but also subjected to further detailing, it is important to note that Lefebvre was the first to build up a self-contained language allowing the clarification and cognition of what is more often than not hidden under the heavy burden of words. Therefore, I want to challenge the traditional appraisal of his theory as merely a «contribution to science». We can safely speak of his contribution to culture: it was Lefebvre who offered an explanation, theoretical as well as practical, of how a man and mankind may cognize *ergo sum* in terms of both one's own and collective «self». However, the development of Lefebvre's theory will necessarily imply not only its gaining ground in the scientific world (the metaphor of wind rose seems to be quite relevant here), but also perfecting the theory's formal aspects and language itself.

If we fail to achieve a proper congruence between the lexical and symbol-expressed rows, the popularization of the ideas of the reflexive theory, as opposed to detailing, may turn out to result in greater losses than gains. The Lefebvre theory does not deserve this in the least. Thus, the need for seeking new *semiotic forms* comes into the foreground.

V.M.Rozin
(RAS Institute of Philosophy)

First, I would like to point out that reflexion is formed in the context of the methodological approach. In this respect, it is interesting to have a look at history of Russia. At the end of the last century Latyshev, while discussing methodological problems in mathematics, emphasized the need for the reflexion of thinking so that one could resolve the problem of compressing the enormous amount of knowledge liable to mastering. We know the profound school of historiography inspired and headed by Petrushevsky. The name of this school was «methodological». One can also refer to works by L.S.Vygotsky, who applying the methodological approach to psychology, addresses reflexion. Finally, today, we have a Moscow-based methodological society (see: V.M.Rozin. Ibid.). What served as the source of generating new «offsprings» of the thought? According to Mikhail Bakhtin, the «one's existential non-presentability». When I was making my report, I had to take into account different opinions voiced by my opponents, who saw the material under discussion in a different way. So, in the absence of thinking rules, I had to formulate convincing arguments and establish the rules of «thought movement» in response to my opponents' remarks and to justify my standpoint as the discussion went on. As a result, a new logic appeared that had a direct bearing on some separate -

thought-activitistic - type of work, and that can be treated as a special type of communication.

Let's now consider another situation. Any attempt to study the thinking process as a specific type of activities usually resulted in a sort of «backturning», that is, the knowledge about thinking as gained in the course of its study was utilized as hypotheses building for historical patterns of thinking and vice versa. I shall repeat here that the results thus obtained concerned only the thinking patterns amenable to identification as distinctly existent in a historical retrospective and were selected by methodologists to normalize their studies; and conversely once new methods of the selforganization of thinking emerged, they were then applied to the historical patterns of human thinking. This type of turning the past into the present and vice versa was also understood as specific reflexive work.

The third type of reflexive work represents a special kind of deduction. Some works by G.P. Shchedrovitsky, commonly recognized as classical, display schemes of activities at the expense of reflexion. First, a «cell» of activities is introduced, to be followed by reflexion mechanisms and those which organize activities, which allows the insertion of different positions and types of knowledge and communication structures. Essentially, this is a deductive type of theoretical thinking. Note that, again, it was a fundamentally different type of work but it was generally cognized as reflexive. Still another situation was conditioned by description of concrete types of activity, which was also understood as reflexion.

Let's summarize the above-stated. The analysis of the above material shows that reflexion cannot exist as one reality. It is common to speak of reflexion as an act. According to this thinking, reflexion is typically graphed as a dial arrow or a board. But, I want to call your attention to the fact that speaking of reflexion we have to do with absolutely different situations. In our case, the first situation was caused by the necessity of constituting new methods of studying the process of thinking. The second situation had to deal with the extension of knowledge gained in the course of the methodologists' self-organization into the past, and conversely, the transference of historical knowledge about thinking into the present situation of the selforganization of thought. The third situation had to deal with the theoretical deduction employing the term of reflexion; and the fourth described some specific types of activities.

Thus, though we speak of reflexion in general terms, in fact, we have to deal with completely different situations of refelxive activity. Then, what do these situations have in common? The immanent and, thus, common feature is that the reflection of an activity, be that of the subject or of anyone else, is always there. As you remember, we started with the study of thinking and interpreted it as activity. However, while in the context of re-

flexion, different types of work are subjected to limitation and are cognized as descriptions of activities, study of activities, reflection of activities, etc. However, we must distinguish between two different things. It is one thing to deal with the task and the structure of reflexive activities that are taking place. This type of work always manifests itself in a new way, depending on the situation within which it exists. It is quite another matter to present any such structure in the discourse in a special way, as an idea of activities and the adequate description of its practical manifestation.

Finally, one more point, one of extreme importance. Usually, all such situations have one feature in common: each presupposes either development or productive thinking. Note that the notion of reflexion is linked to the said implications in many respects and not necessarily to development but also to productive thinking. Really, if we look at the four situations I touched on above, we shall see that I mentioned development only in the third case, when referring to reflexion as a type of deduction. In all the other cases we can speak only of productive thinking, which allows us to obtain new formations that differ from each other because the tasks under consideration are different.

A few words of conclusive comment are necessary here. What is implied by the reflection of activity? Firstly, it is a special type of communication. Thus, when we studied reflexion and, using it, constituted various methods of studying thinking, it was of essential importance that the participants in the seminar took different stands, had different viewpoints, and could argue and give counter-examples. Such collective work is a unique process which enables any participant to look upon the seminar's discussions as an external observer, to present counter-arguments and counter-examples or fundamentally new approaches, and thus forms one's own view of reflexion.

A second noteworthy issue is the presentation of activities. But, again, what is meant by the term «activities»? The analysis of the above examples and situations shows that there is no uniform interpretation for activities. Sometimes, «activities» are preset as an ontology. However, this is rare. Most often it is an opportunity to undertsnad the way another person works. We also speak of activities but in a different sense. In short, activities are no more than a function, or place. The experience gained by tboth he Moscow Methodological Society and the entire reflexive movement in Russia shows that there are, at least, three things that need to be distinguished. Firstly, *the context of reflexion,* which will vary depending on the situation and the task; secondly, *the chart of reflexion,* which includes *the idea of the reflection of activity* in its various versions; and finally *the structure of reflexive activities*, which can also vary to a substantial degree.

O. S. Anisimov
*(Russian Academy for Civil Service,
at the Office of the President
of the Russian Federation)*

After years of work there appeared a logical scheme that shows the upsurge of the purely practical reflexive work conducted by the Moscow Methodological Society. The practice of interaction was extraordinarily intense in psychological terms, since each member was bright and vigorous in arguing in favor of his concept or his viewpoint. The very practice of the then «reflexive» being was, in my view, so sophisticated and so broad – from the naturally generated to ultimately artificial forms of interaction – that the very phenomenon of collective being served as a material, natural prerequisite for the development of the reflexive movement. If we look at the contents of this practice, including purely cogitative immanently verbal structures, we shall see all the history of psychology and even of philosophy reflected therein: when a theorist is under a necessity, slightest though it may be, to assess his contribution or to find his place in the historical process of the science he deals with, he will inevitably have to ponder over it, which was just the case with the period examined. Sometimes, efforts were made to single out reflexion as a separate block, which resulted in the appearance of reflexion-oriented philosophers. But as a movement that unites culture and «live» practice, it evolved, in my view, as far back as the late 1950s. That was followed by a succession of diverse transformations: groupings, separations, changes in attention focusing, etc.; all those metamorphoses, no matter how diversified in nature, preserved their belonging to reflexive inter-action in the most complicated forms.

Researchers who focused directly on reflexion stood out in this area. Lefebvre, in my opinion, was the first to provide the transition from having an action by a collective effort conceived from a practical point of view (whether concerning the feasibility of such action, or the way to effect it, or such action's utility) to singling out the subject of reflexion proper, and further to efforts to create «pre-languages» within the frames of the subject thus «spelled out». To enable these phenomena to be recorded and put under special scrutiny, a whole number of patterns, models and schemes were developed.

To have this thesis more vividly exemplified, I shall appeal to the scheme, which, in my mind, allows identification of attitudes and approaches by G.P. Shchedrovitsky and Lefebvre towards the above event and the said interaction as not contradicting each other, strikingly different though they may seem. Contradictions, in my view, lie in the emphases. Here, I adopt V.M.Rozin's assessment of the nature of being in this inter-action and of the leading positions deservedly occupied by Shchedrovitsky, both subjectively and objectively. Subjectively, he was determined to be ahead of others, and this self-setting had great effect on his actions, making him resort

to the best possible option of organizing himself and choose such an option of placing his actions and their results in objectively meaningful space, socio-cultural and cultural, that this would have not been possible without applying reflexion and specifically arranged reflexive patterns.

How do I envision this difference? First, a preliminary thesis of descriptive type should be introduced to distinguish «pre-activitistic» being as comprising, in its «activitistic» content, actions proper and reflexion as a reflexive relationship providing for the possibility of adjusting an action so as to make it fit into the corresponding active being's component of the «pre-activitistic» being. It was necessary to «place», under certain circumstances, specially arranged communication into the reflexion-related part, or the «reflexive» field, which configurating itself in a particular fashion creates a new mechanism, capable, in turn, of reflecting, through which the basic process would arise. At this point, we see different approaches. I won't identify them now. My comment is only that the difference is great between an author, who understands, and a critic, who usually does not interfere until a suitable moment comes, and between understanding and opposing. Criticism was an extremely important part of the whole story as well as a special function and was to occupy its place within the arbitration process.

Here I want to make special emphasis on the way in which all those procedures were co-organized. In his capacity of leader, Shchedrovitsky was bound to exert his influence on the situation to keep it under control, all the more so since he most often combined the functions of an organizer, critic and arbitrator. He had to introduce some special reflexion model as the «reflexive» support to encompass and explain the entirety of this interaction. Moreover, he had to embark upon the development of the means capable of enabling further exploration into that type of reflexion. In my view, the above-mentioned difference may be summarized as follows. Owing to the position held by him, Shchedrovitsky had to elaborate an integral set of means to provide the survivability of both himself, as a leader, and the overall movement. As for Lefebvre, he was mostly engaged in creating the focusing part of reflexion and appropriate empirical support, which objectively served as a special tool to be used in that particular direction, which was due to the necessity for Lefebvre to realize his own specific goals. It is here that the polemical contraposition stems from: it was either when Lefebvre's interests ran counter to the integral interests of the apparatus or when Shchedrovitsky noticed an excessive bias for this emphasis and diverting of the entire argumentative process from the mainstream of the discussion. In some measure, I was a witness to what was going on then.

Another side of the process was that the Moscow Methodological Society preserved and maintained any movements, including those which came

under Shchedrovitsky's severe criticism such as psychology-oriented or even psyche-organizing ones. The pervasive line, that is, the respective forms in which being and its image (embodied, in particular, in the phenomena of societal type) are themselves existent, was gradually acquiring such a great number of demarcations and instrumentalizations that this could not but find a practical way out and appeared simply in contact.

It was at that point that a special phenomenon of playmodelling, play-drawing of the above relationship was to be generated as basing itself on the plausibility of the presumed practice pattern. Sooner or later, practice would have inevitably been inserted into playmodelling. With the commencement of game modeling in 1979, the possibility that hitherto existed only potentially did present itself in reality. The 1990s were the years of the intensive proliferation of a special type of socio-cultural and cultural «infecting» of huge spaces with reflexivity. However, some problems arose connected with the fact that reflecting was a good occupation but reflexion presented on a free-wheeling basis could destroy any practice. Due to these problems, the above reflexive being was cognized as comprising both positive and negative sides. These were realized as such, internally as well as externally, to a different degree. It was within these confines that the movement was taking place. In the mid–1990s the movement shifted onto an acmeological basis. The idea itself was generated somewhere at the highest levels of the Academy for Civil Service, the only place where it still exists in some special way.

The need for the insertion of reflexivity was prompted by the understanding that a high-level professional can by no means avoid reflexivity. The higher the level of one's professionalism the more effectively the compound of reflexivity serves to ensure success, but only when this reflexivity is well-organized. Thus, not an accumulative but decorative phase of cultural work begins. If these three layers were inserted into the process of organizing managerial work and into the resultant scheme of such work itself, and the insertion were «provided with» reflexivity in a sufficiently proportional degree – there would by impressive results. However, the reflexivity as yet needs itself to be procured with means of a linguistic culture and with an appropriate culture of thinking. It's becoming generally recognized that unless a kind of cultural revolution takes place in managerial work itself, we shall have neither good nor optimal strategies, which will eventually result in a general failure of society. Whatever the results of our awareness, here we have a live practice of reflexion itself, featured by a complicated structural self-arrangement that originated on our soil but allowing the preservation of some traditions (traced back to Fischte, Hegel, etc.), - all this has resulted in a radical problematizing of the very frame of professional activitistic process.

Although not as yet revealed, this problematizing has already signalled its appearance. It seems to me that we are approaching this watershed.

The best that one can do for this country is to avoid turning the reflexive movement into a fetish.

V.Maracha
(Centaur journal)

It is within the context of today's session of the seminar that I would like to discuss one direction of the research of Shchedrovitsky's school, one that can be conditionally named «methodology of societal changes».

Initially, the general interest in reflexion was connected with a set of epistemological problems. The point is that, if seen as a kind of social engineering, the problem of societal changes is most likely to entice one to have one's societal changes-dependant actions constructed upon the foundation of some knowledge, however little, of the object or area you are going to influence. However, it is just this type of knowledge where a number of implicit problems readily arise. The reason is that the natural-science type of knowledge, the most common for European culture, ceases to «work» where society is concerned, because it's here that reflexive paradoxes appear.

A social object «plays» with the researcher and starts generating knowledge of itself and competing with that of the researcher.

Let's presume that there is a society with a number of subjects that are interconnected and thus creating some type of relationship and a certain field within which this relationship exists. Being subjects of a civil society, they are what is called a «reflexive societal establishment». As such, they have self-consciousness and are well aware of the relationship between themselves; and since any society is a self-regulating system, they also serve to generate, in their capacity of system's compounds, some regulatory norms for their behavior and settlement of disputes and the like.

At the opposite pole, we presume a distinctly different subject and call him the agent of societal changes. The agent is seeking to insert some other regulation, one that is to govern the above relationship in a different way. Any society that can be justifiably called civic allows no perspective for such direct leadership, since the normal practice of general strategy conventionally pursued by any such society is inserting some new behavioral prescriptions with the concurrent preservation of the freedom of its subjects' will. This is quite normal, or parliamentary, strategy.

Essentially, this is the situation of two competing behavioral patterns, one of which can be described as natural and the other artificial. Here we have a field for further research in a wide range of disciplines, such as jurisprudence, political science, and economics.

D.V.Rehut
(«Kreon» Holding Company)

Reflexive processes can have a substantial impact on the steadiness of business activities. Early in the 90s, a network of exchanges, «Alice», was created and started to grow rapidly. It had branches in scores of cities including two American offices. On achieving a certain phase of development, it began to need a higher degree of financial independence. The top management of each branch became, perhaps, not without reason, suspicious that their colleagues in the other branches wanted still more independence from the center. This developed an avalanche-like buildup of reflexive processes, as the resulting centrifugal tendencies eventually ruptured the exchanges system. Interestingly, even when these processes became evident to the upper management, there was no stopping them.

The problem of steadiness has been further aggravated by the spread of the Internet. The mobility of every subject of business activities included into the global network destabilizes the situation. This is the case of a *dynamic* network. Its alternative is a *stable* network with tightly fastened components. Regrettably, it is likely to rapidly degenerate into a vertically integrated functional system. A network of the *internal market* type is doomed to balance on the verge of either an economically unjustified protectionist policy or a full self-dissolution into the environment.

Thus, the problem is to create a stably operating economic entity incorporated into the global network in such a way as to be capable of varying the communication parameters of its components with a view to making the most of the network's advantages.

It seems that steadiness of any organization, which operates through the Internet, can be securely preserved by selectively suppressing the «centrifugal» effect of reflexive processes at the level of the Board of Directors. As an empirical solution adequately covering the problem, it is suggested that several interaction mechanisms, all representing a single system of differing economic entities, be introduced.

These principles were used for the foundation of a creative holding company of a new type. The company allows the inclusion of any number of relatively independent firms (persons) maintaining a contractually defined economic relationship with each other and sharing the same evolutional ideology of creative development. Contracts between member companies have been signed for a five-year term and may be amended once a year by agreement between the parties. The company's performance is reported on an Internet portal. The general activities of the company are managed by the Board of Directors, which is composed of the member firms' upper managers, each being responsible for his area of operation as a separate direction of the parent company business as well as for the appropriate section of the portal. New members are admitted by unanimous

vote, which may be described as element of *conciliarism*. It has been agreed that the Board must not have more than thirteen members. On achieving this number the organizational structure of the holding company may be revised.

The second (and, perhaps, the most important) function of the Board of Directors is *managing creativity*. This is effected through a cumulative voting on rating to be conferred on member firms including physical persons (if any) as included into the appropriate Participants List, depending on the results of their respective weekly performance. This mechanism can be treated as an internal market designed to make unbiased assessments; its peculiar feature is that the weekly creativity as shown by the participants is «paid» for from a fixed amount of some conditional «creativity-denominated» currency in the collective ownership, as it were, of participants.

Drawing comparison between the two economic entities as described above, one can clearly see that the second one has introduced some permanent means to narrow the space within which non-controllable reflexive structures might be generated by any member entity.

Symbolic operations with the «creativity-denominated currency» provide conditions for mutual claims and approvals to be explicitly announced in non-economic terms. Interactivism opens the possibility to act providing an alternative to reflexion.

V.I. Maksimov
(RAS Institute of Management Problems)

The research we are engaged in can be called a cognioreflexive technology for building models and producing managerial solutions. This component of reflexion is of essential importance. Reflexive processes that are involved in the study are recorded through a picture of virtual reality as factually conceived by a subject to build the reality picture we are modeling. In building this type of models, individual and collective reflexive patterns differing in the degree of their self-involvement interfere with each other, and new tasks requiring new methodological approaches are encountered. The underlying premise for the creation of this class of models is the thesis that prior experience is of little importance when applied to the future. One has to master the art of forecasting. Using special procedures that rely on subjective perceptions of the participants in the process, we can build a cognitive chart or a weighted graph describing relationship between factors of differing nature in their interaction. The edges represent the influence exerted by these factors on each other. Once discrete time is introduced into the model, it becomes a springboard for a whole chain of developments. Thus we can eventually observe the process running in a reality created by ourselves. It is noteworthy that the models built in this manner also allow the solution of the «in-

verse task». In accomplishing an «inverse» task, we are to answer the question, «What is to be done to ...?» and determine what factors of influence are to be supplied to the input to provide attainment of the purpose as sought. So, on supplying these, we enter roughly the required area, to be, then, at liberty of detailing to our discretion the influences supplied. These models are used to prognosticate the development of regions and various objects within a variety of geopolitical environments and to solve a number of other tasks of applied nature.

V.M.Kapustyan
*(Research Institute
of Informational Technologies)*

In the monograph «Conflicting Structures», a reference is made to the notion of «a system portrayed as underlain by another one». Being of paramount importance, this notion is worth further investigation. Even though the multilevel types of symbolic notations have attracted attention of many researchers they are, regrettably, still lacking the attention they deserve. Among other researchers, similar ideas were postulated by Avenarius in his «Pure Experience Criticisms». A simple two-level symbolics was offered by Pierce. A simple two-level psychology and two-level reflexion were developed by Vaczlahvick. It is important to embark upon the investigation of what has been done by V. Lefebvre. The need for applied research has come to the foreground.

A.A.Zenkin
(Computer Center, RAS)

I shall dwell on the problem of visualization and instrumental support to the reflexive process involved in the decision-making. Any process of decision-making presupposes the presence of a problem to be resolved. There are experts whose opinion serves as basis for a decision-maker (DM) to arrive at a solution. There is a specialized system of visual analysis of data, which allows visualizing the essence of the problem. V.Lefebvre in his first works on psychography in the early '70s used the algebra of his graphical subjects to visualize the core of a problem. Therefore, he became the inventor of what is known as cognitive reality and was the first to use visualization as a means of portraying the semantics of a specific function concerned. Once the essence of a problem is visualized, the DM becomes an active participant. It is worth noting that where the visualization is available as needed, the level of the DM competence rises to approximate that of an expert. And, most remarkably, such a situation also changes the experts' behavior. The effect is usually further enhanced when a picture represents the viewpoint of other experts. This is an observation based on our experience in the development of systems of visual support in mathematical research.

It is important to note that science has been progressively evolving over the past 300 years into such an abstract system that it's become difficult to grasp it, at least, in the degree it actually deserves. To make matters worse, modern science has departed from ethics. Academician Arnold speaks of what he describes as «the catastrophic situation with science», which has happened because science has become too perfect, that is too abstract. It is only through visualization-based support that the vector of development will start moving back from the abstract thinking to «live» world contemplation and backwards.

I.E. Zadorozhniuk *(Journal of Psychology)* — Considering the socio-cultural context of the issues under discussion, I would like to say that the debate is going within the framework of what can be described with the French term «clarism» (transparency, clarity). Clarity is the topic of discussion in many sciences. As regards the RAS Institute of Philosophy, one can refer, in particular, to the discussion of the accuracy of psychological notions (A.V.Brushlinsky). The popularity of Freudism as well as neo-Freudism is on its wane, - reflexive processes are difficult to build on the quicksands of the unconscious. There is a growing interest in analitics in philosophy (A.F. Griaznov). Analytical philosophy and the English tradition, each tending to clarify the meaning of terminology, are becoming increasingly appealing.

Likewise, the economic theory is currently undergoing a revision of its foundations: as you know , the shamanist «campaigns» in support of a self-regulating role of the market, which claimed to be all-embracing and all-explaining, are fading. This is equally valid for performative politics: negative campaigning has ceased to be generally considered as governing factor. Thus, there is every reason to render support to the reflexive movement, which is characterized by transparency of the notions it involves.

E.P. Grigoryev *(Russian Academy of Civil Service, at the Office of the President)*: has presented a summary of his research on systems specifically designed to support a synthesis of reflexive alternatives in the «golden section» format, placing special emphasis on similar systems he has developed.

A.M. Stepanov *(Institute for Meta-Analytical Research)*: has scrutinized the prospects that homeostatics may have for proper involvement in the modeling of reactive and reflexive statuses of human psyche.

I.P. Beliayev *(Research Institute for Informational Technologies)*: has outlined the prominent role of V.Lefebvre's work in interdisciplinary research as a potential foundation for the integration of heterogeneous knowledge.

V.E. Lepsky *(RAS Institute of Psychology)*. In his speech delivered to sum up the Round Table proceedings, he emphasized that nowadays *homo sapiens* is prepared to take full advantage of reflexion, being aware of its importance and inevitability, while, perhaps, eluding the memory of its «wonder, mystery, and authority», to quote Dostoyevsky, though not rejecting its ontological status. Reflexive processes and related management, as factually presenting themselves at the current stage of socio-cultural development, are a product of supreme topicality, which is especially true for Russia.

By understanding another person's thoughts and sensations we simplify (in a sublime sense) this person's and our own life; this is true for subjects of any degree of generality, from an individual to society as a whole. However, its influence is especially important for a group subject responsible for making decisions. This is where the deep interest in reflexive processes originates, manifesting itself in conferences, round table discussions, publications, and many other initiatives.

METHODOLOGY, THEORY, EXPERIMENT

FUNCTIONS OF FAST REFLEXION IN BIPOLAR CHOICE

© Vladimir A. Lefebvre *(USA)*, Jack Adams-Webber *(Canada)*

Vladimir A. Lefebvre
University of California,
Irvine, USA, professor

Jack Adams-Webber
Brock University, Ontario,
Canada, professor

Introduction

Our view of «reflexion» has been essentially broadened during the last twenty years. Traditionally we have considered it to consist of the conscious constructing of images of the self and others by human beings. Now we have evidence that there is a reflexion of another nature as well. It is as if an inborn informational processor is built in into human psyche whose function is to *automatically* create these images together with their subjective domains. This processor generates a specific specter of human responses not controlled consciously and running extremely fast (one-two milliseconds). This type of reflexion, as distinct from the traditional concept is called *fast reflexion* (*Lefebvre, 1987*). In this paper we will decipher the mathematical laws governing the automatic functioning of this inborn processor and show how they reveal themselves in human behavior (*Adams-Webber, 1996a*). The result of this analysis will be a formal model of the subject with fast reflexion.

Ideally, global theoretical models ought to possess two properties: integrity and uniformity. Integrity means that the model must be able to reflect simultaneously the subject's perception, behavior, and inner domain. Uniformity requires that different aspects of the subject's activity must be

described in terms of the same theoretical language. The general method for attaining these two properties is to represent the subject as a *composition of mathematical functions*. Various elements of this composition are interpreted as «inputs» and «outputs» and as images of the self and of other subjects. These images can have their own inner domain containing images of the next order. As a result, we succeed in producing a unified functional description of the subject's inner and external activity. A composition of mathematical functions is also a function. It describes the subject's behavior. Therefore, the composition's structure reflects not only the subject's inner domain, but also the macrostructure of a computational process generating behavior. In the simplest cases, when the «global» function of behavior is known in advance, information about the mental domain can be obtained from a purely mathematical analysis of the properties of the function.

Introduction of the concept of reflexion into psychology

It is no accident that early steps in this direction were taken in Russia, where the dominance of behaviorism has been historically less oppressive than in America. These preliminary steps were related to a discovery of a sudden interruption of subjects' automatized processes in experimental games. Typical laboratory experiments included two phases. In the first phase, a computer program playing the role of an opponent 'taught' subjects a particular mode of behavior which was advantageous for them. Then, in the second phase, the program suddenly changed its tactics in such a way that the same mode of behavior became disadvantageous. In these experiments, it was discovered that the subjects would alter their behavior abruptly. No evidence of gradual retraining was observed (*Lefebvre, 1967; 1969; 1972; 1977a; Baranov & Trudoliubov, 1969a,b; Lepsky, 1969*).

The abrupt change from a previous automatized activity was often accompanied by some «insight» or «realization»: the subjects suddenly «understood» that their opponent had, during the first phase of the experiment, deliberately misled them. Under this operational interpretation, the concept of «realization» acquired a functional meaning. It was believed to be connected, if not with the reorganization of human automatized activity, then at least with its instant blocking. Nonetheless, the use of terms such as «realization», «understanding», «intention», whose meanings depend significantly on the context, threatened a return to pre-behaviorist 'mentalism' and abandonment of the commitment to the scientific falsification of hypotheses.

An alternative approach was to construct simple formal models of subjects in the framework of which concepts reflecting the human subjective domain could acquire clear and unambiguous meaning. This approach

led to the construction of several particular models of the subject with reflexion. In this paper we shall limit our consideration to one line of the development of such models associated with studying the bipolar choice (*Lefebvre, 1977b; 1980; 1982; 1992; V.A.Lefebvre, V.D.Lefebvre, Adams-Webber, 1986; Krylov, 1994; Miller & Sulcoski, 1999*). This theoretical model gave rise to many new methodological problems which have been addressed in an extensive literature (*Adams-Webber, 1987; 1995; Batchelder, 1987; Kauffman, 1990; Lefebvre, 1987; 1995; Levitin, 1987; Popper, 1992; Rapoport, 1990; Schreider, 1994; 1998; Townsend, 1983; 1990; Wheeler, 1987; Zajonc, 1987*).

Mechanism for generating images of the self and others

The hypothesis of existence of the inner processor for generating fast reflexion can be described as follows (Lefebvre, 1985):

(1) A person possesses an inner formal mechanism for modeling the self and others. This mechanism is universal and does not depend on the particular culture to which a person belongs.

(2) The models of the self and other are reflexive; that is, these models may themselves contain models of the self and other, and so on.

(3) The inner formal mechanism for modeling includes a computational process, which is automatic and does not depend on conscious will. This process predetermines a person's responses in a situation of choice between «good» and «bad», and it also generates his inner feelings, such as guilt and condemnation.

(4) The models of the self and of the other also have this computational ability, which allows a person to model automatically his own and his partner's inner feelings, providing information that is unavailable to direct observation.

Let us mention further that this human modeling mechanism is not a chain of verbal reasoning such as «I think that he thinks that I think,» etc. Such chains are purely linguistic structures. In contrast, we are concerned with the direct computational modeling of the self and other which proceeds automatically and independently of inner speech (*Lefebvre, 1985, pp. 291-292*).

This hypothesis was published sixteen years ago as more than a methodological declaration. It contained a detailed description of a possible mechanism for cognitive computations; however, experimental evidence in its favor began to appear only recently. For example, Hughes and Cutting (*1999*) demonstrated that children's ability to reproduce other persons' inner domains operates automatically and does not depend on verbal development.

The mechanism for the automated generation of images of the self and others described in this section lies outside the framework of the tra-

ditional understanding of reflexion as a human conscious constructive activity connected with his will and desire. While constructing one's own image consciously a person may provide it with many features of his own choice. Unlike this 'creative' activity, the processor under consideration is inseparable from the human being itself. The subject in a normal state does not sense its presence. One cannot eliminate the control of this processor by an effort of will, which is similar to the impossibility of intentionally ceasing to understand words in one's own native language. We have called the automatic process of generating the images *fast reflexion*, in order to avoid confusion with a conscious process of comprehending the self and others.

Reflexive model of bipolar choice

The model represents a subject facing the choice between two alternatives, A and B. One of them, A, plays the role of the positive pole, and the other that of the negative pole (*Lefebvre, 1977b; 1980; 1995; 1997*). In the simplest case, when the subject's inner world does not contain the images of other subjects, his choice can be described by the function $X_1 = f(x_1, x_2, x_3)$, where all variables take their values from the interval [0,1] (see Appendix). The value of x_3 is the subject's *intention* to choose the positive pole. The greater x_3, the more the «desire» to make this choice. The value of X_1 is interpreted as the *probability* with which the subject is *ready* to choose the positive pole, A, in reality. The value of x_1 is the world's *pressure* toward the positive alternative A at the *precise moment* of choice. The value of x_2 is the world's *pressure* toward A which is *expected* by the subject based on prior experience. We can consider the values of x_1 and $(1 - x_1)$ as normalized utility-measures of the alternatives *A* and *B* at the moment of choice, and the values of x_2 and $(1 - x_2)$ as normalized expected utility-measures.

A mathematical analysis of the function $X_1 = f(x_1, x_2, x_3)$ of three variables demonstrates that it can be represented as a composition of one particular function of two variables, $F(x,y)$, and that such a representation is unique; that is, $X_1 = F(x_1, F(x_2, x_3))$. Function $X_2 = F(x_2, x_3)$ is interpreted as the *image of the self* possessed by the subject. Under this interpretation the subject has a functionally correct image of the self, since the same function, $F(x,y)$, describes him from both his own perspective and external points of view. The first variable in this function, x, represents perceptual input, and the second variable, y, is a mental image of the self. Therefore, in considering the function $F(x_2, x_3)$, which plays the role of an image of the self, we have to interpret the variable x_2 as an image of the input, and the variable x_3 as the subject's mental representation of his image's image of the self. To avoid confusion, we call this secondary image a *model of the self*. The variable x_3 now takes on an additional meaning: it represents not

only the subject's intention, but also his model of the self. As a result we obtain a formal analogue of the macro-structure of the subject's inner domain. This analogue is a structure of composition $F(x_1,F(x_2,x_3))$. At the same time, this structure describes the process involved in the cognitive computation of X_1: first, $X_2 = F(x_2,x_3)$ is computed, and then $X_1 = F(x_1,X_2)$.

The subject's intention may depend on factors distinct from x_1 and x_2, and, in principle, can take on any value from [0,1]. In cases in which the intention depends only on x_1 and x_2, we assume that the subject's cognitive mechanism coordinates both the subjective intention, x_3, and an objective readiness, X_1, in such a way that $X_1 = x_3$ (*Lefebvre, 1992*). This equation corresponds to the statement that the subject has a correct model of the self.

Functional role of the image of the self

Theoretical models may assist in conducting thought experiments. With the help of such an experiment we will clarify the role which the subject's image of the self plays in his activity. Let the subject face a moral choice. In his value system, alternative *A* is a good act, and alternative *B* a bad one. Suppose that on the basis of the previous experience the subject sees the world as pressing him toward choosing the positive pole, that is, $x_2 = 1$. Let the subject have the intention of choosing the positive pole, that is, $x_3 = 1$. With these data we find the value of the image of the self: $X_2 = F(1,1) = 1$ (see Appendix). Thus, the subject «sees» himself performing a good deed. Suppose that at the moment of choice, the world exerts pressure on the subject to choose the negative pole, which means $x_1 = 0$. Then the subject's real choice will correspond to the value of the function $X_1 = F(0,F(1,1)) = 0$, i.e., in reality the subject carries out a bad action. The next time a similar situation arises, the subject will expect the world to press him toward the negative pole, which means that the value of x_2 is changed from 1 to 0. If the subject's intention is still positive ($x_3 = 1$), the value of his image of the self becomes $X_2 = F(0,1) = 0$, and if the world keeps pressing toward a bad action ($x_1 = 0$), his real choice will correspond to the value $X_1 = F(0,F(0,1)) = 1$, that is, the subject will choose the positive pole. In the first case, the subject sees himself as «good» but commits a bad action ($X_1 = 0$); in the second case, the subject sees himself as «bad» but performs a good action ($X_1 = 1$). The image of the self plays the role the subject's «conscience»: seeing oneself as «bad» prevents one from choosing the negative pole. It follows from the formal model that when the value of $X_2 = 0$, then the value of $X_1 \equiv 1$. Therefore, a possible function of the image of the self is to block some of the subject's actions. If at $x_1 = 0$ the value of an image of the self suddenly changes from $X_2 = 1$ to $X_2 = 0$, we can describe this change in standard introspective language as follows: «the world presses the subject toward evil, but the subject imagines himself as being ready to commit

a bad act, then feels a prick of conscience and refuses to obey the pressure of the world.»

The difference between automatized and deliberate choice

A distinction between automated and deliberate choice is traditionally based on the notion that a person sometimes consciously plans and then performs an actions as planned, while other times the phase of conscious planning is absent (*Bargh & Chartrand, 1999*). The reflexive model allows us to make a clear distinction between these two cases: the variable x_3 represents the subject's will (intention, desire); and the variable X_1 represents his behavior. Only behavior which does not depend on a subject's will can be called «automatic»; that is, the value of X_1 does not depend on the value of x_3. Similarly, a subject's behavior can be called «deliberate» only if the identity $X_1 \equiv x_3$ holds, i.e., it is entirely determined by his will. Finally, mixed cases are possible in which intention x_3 influences X_1, but does not entirely determine it.

Automatic choice

An automatic choice is possible only in such pairs $x_1 = a$ and $x_2 = b$ for which the value of the function $X_1 = f(a, b, x_3)$ does not depend on the value of x_3 (see Appendix). As an illustration we will consider an experiment described in Wegner and Wheatley (*1999*). Their subjects were asked to attempt to read the unconscious muscle movement of a participant confederate whose fingers were placed on top of their own on «yes» and «no» response keys. Then a subject heard a trivial question of the type, «Is the capital of the USA Washington, D.C.?». In reality, the confederate did not hear the questions and so his finger movements could not depend on their content. Nevertheless, the subjects pushed the correct button 87% of the times. In 63% of the cases they thought that they were acting according to their own will, and in 37% they believed that they felt a slight movement of the confederate's fingers.

In commenting on this experiment the authors write: «They answered correctly, in other words, but did not have a strong sense of willfully having done so and instead thought the confederate had played a significant part. The pattern of findings across six experiments suggests that the correct answers are produced automatically» (*Wegner & Wheatley, 1999, p. 457*).

This conclusion corresponds to the mechanism which is represented in the formal model. Certainly, the majority of the subjects did not have any doubts that Washington, D.C. is the capital of the USA. The pressure of the external world was a social 'demand characteristic' directed toward the positive pole «tell the truth,» in the given case, «yes,» so $x_1 = 1$. After the first question the subjects expected the other questions to be of the same

type: they anticipated pressure toward true answers; that is, $x_2= 1$. As shown in the Appendix, undder such conditions choice is automatic, that is, it does not depend on intention x_3.

Deliberate choice

In this case the intention, x_3, predetermines entirely the subject's readiness, X_1. In accordance with the model, this is possible only if both $x_1= 0$ and $x_2= 0$ simultaneously, that is, in the situation in which the world presses the subject to choose the negative pole ($x_1= 0$) and the subject's expectation is the same ($x_2= 0$). Under this condition, $X_1 \equiv x_3$, that is, any subject's intention turns into his readiness, X_1. At first glance it seems that such a representation of deliberate or «free» choice is bound up with a particular problem, since real people even when they know the correct answers, may exhibit willfulness and answer incorrectly. To clarify this situation we return to Wegner and Weatney's experiment (*1999*), in which the subjects heard questions of the type, «Is the capital of the USA Washington, D.C.?» As we demonstrated earlier, the correct answers to these questions are automatic. But many social psychologists who conduct surveys encounter subjects' «rebellion,» especially during a series of monotonious trivial questions. Doesn't this fact contradict the model's predictions? In fact, the formal model explains the psychological mechanism underlying such rebellion. As we already have demonstrated, in experiments of the Wegner-Weatney type the subject takes on values $x_1= 1$ and $x_2= 1$. Suppose that after he answers a number of trivial questions, his «value system» suddenly changes: the positive pole, the choice of «tell the truth», becomes negative and the negative pole, the choice of «lie,» becomes positive. The social imperative «tell the truth» did not disappear, but now it is directed toward the negative pole. A pressure toward the new positive pole is equal to zero. So, $x_1= 0$ and $x_2= 0$, and the subject's choice becomes deliberate. Thus, the inversion of the poles stops the automatic mode of activity.

The golden section and other constant

An important impetus for the development of this model in the United States was a series of experiments based on bipolar dimensions of judgment represented by pairs of antonymous adjectives (such as strong-weak), within the framework of Kelly's (*1955*) personal construct theory, summarized by Adams-Webber (*1996b*). In the early 1970s an unexpected finding was obtained repeatedly (*Adams-Webber & Benjafield, 1973; Benjafield & Adams-Webber, 1976*): experimental subjects, on average, assigned their personal acquaintances to the positive poles of dimensions with a relative frequency of 0.62. Benjafield and Adams-Webber (*1976*) conjectured that the theoretical value of this constant might be the golden section (($\sqrt{5}$-1)/2=0.618...).

The first attempt to explain the underlying psychological mechanism and specify the conditions for the appearance of the golden section in such experiments was formulated with the help of the reflexive model (*Lefebvre, 1985*). In accordance with this model, the golden section appears under two conditions:

(1) The subject does not have an operational criterion for determining whether a given object actially possesses the quality the presence of absence of which he must judge.

(2) The act of ascribing this quality to the object plays the role of the positive pole and the act of rejecting it that of the negative pole.

Let us clarify condition (2). It is not important that a given quality is positive or negative in its essence; the important factor is the subject's evaluation of ascribing this quality to the object. For example, suppose someone bought a defective watch; in evaluating this purchase in terms of the construct 'failure-success' we have to consider 'failure' to be the positive pole and 'success' to be the negative pole. To test the model's predictions, we need to analyze data from experiments in which both conditions specified above were satisfied. Several experiments conducted within the framework of the investigation of «mere exposure» (*Zajonc, 1968*) meet the criterion, especially those requiring subjects to choose between two patterns, one of which had been previously presented with an extremely short exposure time of 1-3 milliseconds (*Kunst-Wilson & Zajonc, 1980*). As shown in previous experiments, this time is inadequate for the subjects to memorize a pattern consciously, however, the «old» alternative, that is the one shown previously, was chosen by the subjects more often (*Kunst-Wilson & Zajonc, 1980*). We might reason that the prior exposure of patterns orients the pairs shown in the second phase of these experiments. Each «old» pattern assumes the role of the positive alternative, and its «new» counterpart that of the negative alternative. If we take this assumption into consideration, then in accordance with the reflexive model, the «old» alternative must be chosen not just «more often», but with the relative frequency of 0.62. We analyzed all of the available data from similar experiments (*Lefebvre, 1995*) and obtained the following results:

Kunst-Wilson & Zajonc (1980), 0.60;
Seamon, Brody & Kanff (1983), 0.61;
Mandler, Nakamura & Van Zandt (1987), 0.62;
Bonano & Stillings (1986), 0.66, 0.63, 0.62, 0.61, 0.63, 0.62.

The last line contains six results because the authors conducted six independent experiments. We see that the data cluster around the value 0.62, which is exactly what the reflexive model predicts.

The reflexive model yields numerical predictions also for cases in which, prior to the beginning of an experiment, the subjects develop the inten-

tion to evaluate objects only positively or only negatively. In the first case, x_3 = 1, and the model predicts that the subjects will make positive evaluations with the probability $X_1 = (2/3)$; in the second case, $x_3 = 0$, the model predicts that the probability of positive evaluations be $X_1 = (1/2)$.

Special experiments with bipolar constructs in which the subjects' intentions were determined, have shown that with positive intentions the frequency of choosing positive adjectives was equal to 0.67; and with negative intentions this frequency was 0.5 (*Adams-Webber, 1997; Adams-Webber & Rodney, 1983*). Therefore, the reflexive model also passed this test.

Conclusion

We have described and analyzed the simplest possible model of the subject with fast reflexion, which does not contain images of others. In more complicated models, the analysis begins not by writing a function describing the subject's choice, but by constructing a reflexive structure as a basis for the function describing behavior.

It is important to keep in mind that reflexive models are not limited to the analysis of the subject's fixed states. From the very beginning of the development of the reflexive approach, it has employed *dynamic models* (*Lefebvre, Baranov, and Lepsky, 1969*), which are now widely used in modeling various psychological phenomena (*Barton, 1994; Kelso, 1995*). A recent use of the dynamic model of the reflexive subject has led to the hypothesis that one of the fundamental functions of self-awareness consists of fighting against chaos, which appears in the series of sequential cognitive computations (*Lefebvre, 1999, 2001*).

Finally, mathematical methods have been used successfully in modeling behavior, memory, learning, perception, and thinking. Their use in constructing models of a subject capable of being aware of the self and performing deliberate actions is a natural direction for the development of psychology.

Appendix

1. The Main Equation

    The function $X_1 = f(x_1, x_2, x_3)$, which describes the subject's readiness to choose the positive pole, is

    $$X_1 = x_1 + (1 - x_1)(1 - x_2)x_3, \tag{1}$$

    where $x_1, x_2, x_3 \in [0,1]$ (*Lefebvre, 1991; 1992b*).

2. A Theorem on Reflexion

    The functional equation $K(x_1, K(x_2, x_3)) = x_1 + (1 - x_1)(1 - x_2)x_3$, where x_1, x_2, x_3 are any numbers from [0,1] and all values of $K(x_2, x_3)$ belong to [0,1] has only one solution: $K(x,y) = 1 - y + xy = F(x,y)$ (the proof is given in Lefebvre, 1992). It follows from this theorem that the subject can be represented as

    $$X_1 = F(x_1, F(x_2, x_3)). \tag{2}$$

The following function corresponds to the image of the self:

$$X_2 = F(x_2, x_3) = 1 - x_3 + x_2 x_3. \tag{3}$$

3. The Correct Model of the Self

Correctness means that $X_1 = x_3$. It follows from (1) that the following function corresponds to the subject with the correct model of the self:

$$X_1 = \begin{cases} \dfrac{x_1}{x_1 + x_2 - x_1 x_2} & \text{, if } x_1 + x_2 > 0 \\ \text{any number from } [0,1], \text{ if } x_1 = 0 \text{ and } x_2 = 0 \end{cases} \tag{4}$$

4. Automatic Choice

A choice is called *automatic*, if the values $x_1 = a$, $x_2 = b$ are such that $f(a,b,x_3) \equiv \text{const}$, where x_3 is any number from [0,1]. It follows from (1) that choice is automatic if at least one of the variables (x_1, x_2) is equal to 1.

5. Deliberate Choice

A choice is called *deliberate*, if the values $x_1 = a$, $x_2 = b$ are such that function $f(a,b,x_3) \equiv x_3$, where x_3 is any number from [0,1]. It follows from (1) that the choice is deliberate only if $x_1 = x_2 = 0$.

6. Golden Section and Other Constants

We assume that (a) the world's pressure toward the positive and negative poles is the same, $x_1 = (1/2)$; (b) the subject's expectation of the pressure toward the positive pole is equal to his readiness to choose it, $x_2 = X_1$. It follows from (1) that under these conditions

$$X_1 = \frac{1 + x_3}{2 + x_3} \tag{5}$$

If the subject's intention has not been determined in advance, the subject has a correct model of the self, $X_1 = x_3$; then (5) transforms into the equation $X_1^2 + X_1 - 1 = 0$, whose solution is $X_1 = (\sqrt{5}-1)/2 = 0.618...$. If the subject's intention has been predetermined, $X_1 = (2/3)$ at $x_3 = 1$, and $X_1 = (1/2)$ at $x_3 = 0$, as follows from (5).

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REFLEXION AND RELEVANT PROBLEMS*

© 1975 Georgy P. Shchedrovitsky *(Russia)*

Georgy P. Shchedrovitsky (1929-1994) was one of those who laid the foundation and determined the course of reflexive studies. The younger generations of scholars are inspired by his creative heritage. G.P. Shchedrovitsky was an outstanding phenomenon in Russian philosophy. According to Vladimir Lefebvre, Shchedrovitsky's influence on Soviet (Russian) culture can be compared only to that of Bertrand Russel on the Anglo-Saxon world.

Reflexion is one of the most interesting, complicated, and, to some extent, mystic types of human activity. At the same time, reflexion is the most important facet of the activity development mechanism. Modern encyclopedias define reflexion as a «form of the theoretical activity of a socialized person , which is aimed at comprehending one's own actions and the laws that govern them»; or as «a process of self-discovery revealing features that are specific to a person's inner world» [1]; or as «understanding of something by studying and comparing.» In a narrow sense, reflexion is a new change of the spirit of the «Self» that follows the act of cognition enabling the appropriation of the cognized" [2].

Although the works of Aristotle and Plotinus contain profound reasoning in respect to different facets of what we now call reflexion, the specific problems associated with this concept in its modern sense arose from a dispute between Locke and Leibnitz [3, 4] or, to be more exact, from Kant's meditations stimulated by this dispute. Kant imparted a gnosiological (and still methodological) form to reflexion, in which this concept is now represented. Fichte added an epistemological nuance to this concept: reflexion of knowledge is a «science-teaching». This puts it in the context of the processes of life development. Hegel made an attempt to define reflexion immanently within the framework of the general picture of the spirit's functioning and development [5]. After Hegel, reflexion became and remains until now one of the most significant concepts substantiating the philosophical analysis of knowledge [6]. At the same time, there were few if any attempts to describe reflexion or to construct its model within the specific framework of scientific, rather than philosophical, analysis of activity and

thinking. This can be explained by the fact that the problem of the development of scientific theories of activity and thinking has not been formulated. However, when we formulate and emphasize this problem, we come up inevitably against problems of system-structural modeling, theoretical description, and empirical analysis of reflexion within the frameworks of appropriate scientific disciplines. This determines both the viewpoint and the means of representation.

Consequently, we are interested in reflexion from the viewpoint of the formal rules governing the structure or (according to another interpretation) the representation of the mechanisms and laws of the activity's natural development [7]. However, in this respect reflexion was found to be very complicated. Ideas accumulated in the course of the evolution of philosophy connect reflexion, first, with the processes of giving birth to new meanings; second, with the processes of objectification of meanings in the form of knowledge, objects, and objects of activity; third, with the specific functioning of (a) knowledge, (b) objects, and (c) objects of practical activity. Perhaps, the list is not complete. However, this is already too much for the attempts to represent everything as a mechanism or formal rule to design or develop the schemes. Therefore, we must try to reduce all these aspects to less involved mechanisms and relations in order to derive them from these mechanisms and relations, thus creating a unified system.

The relations of cooperation can be taken as a simpler constructive principle. From these relations, or relying on them, we can deduce the peculiar characteristics of the functioning of consciousness, meanings , knowledge, and objects. Therefore, one must construct a scheme of such cooperative relations that could be considered as being specific to reflexion.

The scheme of the so-called «reflexive outgo» plays this role. This scheme was devised for other tasks[1], but later it was used to introduce and explain reflexion as such. Although reflexion can be introduced into the context of activity on the basis of many different empirical situations, we shall briefly describe our method of its introduction.

Suppose that some individual performs an activity prescribed by his goals (or tasks), means, and knowledge, and that, for some reason, he fails. He does not obtain the product he desired, or he cannot find the appropriate material, or he fails to take the necessary action. In any event, he asks himself (and others) the following question: «Why did I fail, and what is to be done to obtain the desirable result?»

So how can one find the answer to this question? In the simplest case, the individual (or someone else) has already performed the task needed to

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[1] Here, two circumstances have played a decisive role: (1) the necessity to explain the specificity and origin of methodological knowledge [8], and (2) polemics with V.Lefebvre as to the schemes and formal descriptions of reflexion [9].

reach the stated goal under similar conditions, and hence the patterns of this activity are already known. Then the answer will be an ordinary description of the appropriate elements, relations, and connections of this activity, which has the form of directives or instructions on copying the activity. In a more difficult case, an activity that must be performed to achieve the purposes under the given conditions has never been constructed by anybody, and hence there are no patterns that could be described in methodological terms.
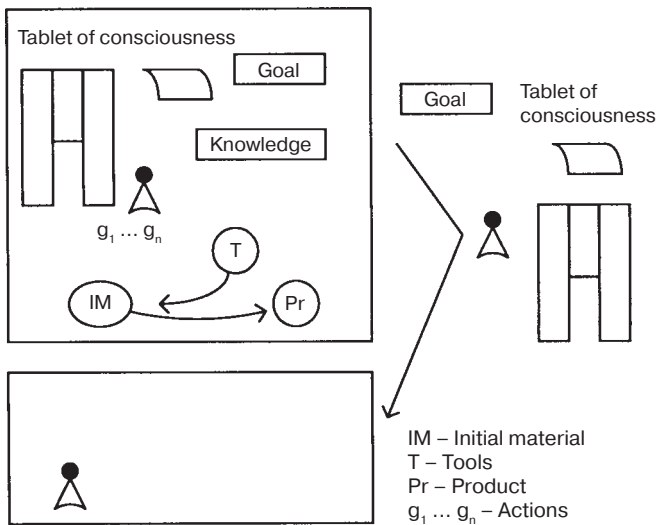
Nevertheless, the answer must be given, and now the answer is created as a project or plan of a future activity rather than a description of the activity performed in the past. Even if the planned activity has never been attempted before, the planning can be performed only on the basis of the analysis and awareness of the previously performed activities and their results. What should these analyses and descriptions look like, and how should the plan of a new activity rely upon these descriptions? All these questions call for a special discussion. For our purposes it is important to note that in order to obtain the descriptions of performed activities, the individual (if we take him as isolated and «general individual» [10]) must change his previous position of an actor for a new one that is external with respect to both the performed activities and the future activity.

This is what we call the «reflexive outgo». The new position of an actor, characterized with respect to his former position, will be referred to as a «reflexive position», and the knowledge produced in this position will be the «reflexive knowledge», because this knowledge is considered in rela-

tion to the knowledge obtained in the former position. The scheme of the reflexive outgo will serve as the first abstract model of reflexion as a whole.

Considering the relations between the previous activities (or the newly designed activity) and the individual's activity in the reflexive position, one may notice that the new position seems to absorb the old ones (including the one being planned). The individual's activity treats *the* former activities as the material for analysis, and the future activity is treated as an object to be designed. This relation of absorption through knowledge manifests itself as the second property (although a nonspecific one) of reflexion as a whole[2]. The relation of reflexive absorption, serving as a static equivalent of reflexive outgo, allows us to consider the reflexive relation as a kind of cooperation among different individuals and, consequently, as a kind of cooperation among different activities. Now the essence of the reflexive relation lies in the fact that an activity evolves and creates more and more sophisticated cooperative structures on the basis of the principle of reflexive absorption rather than in the fact that an individual moves «away from himself» and «beyond himself». At the same time, we gain an opportunity to consider the reflexive outgo attempted by an isolated individual as the formation of reflexive cooperation between two «activity positions» or «loci». However, to enable the two activities – reflected and reflecting – to cooperate on an equal basis, it is essential that proper cooperative connections be established between these activities supported by an appropriate material organization. This requirement creates a number of problems and paradoxes. The point is that the reflexive outgo, or the relation of reflexive absorption (which is the same), turns the initial activity not even into an object but merely into material for reflecting activity.

Reflected activity and reflecting activity are not equal as they occupy different levels of hierarchy, have different objects and different means, and are served by different types of knowledge. Therefore, a highly sophisticated structure is required to allow these activities to be combined within the framework of a single act of cooperation of a theoretical or engineering-methodical type.

In the case of scientific knowledge, a major problem is that of organizing scientific subjects that could remove or «flatten» reflexion by integrating knowledge, ontological representations, models, means, etc., acquired in the reflected and reflecting positions. This issue gave rise to some specific logical and methodological problems that determined the development of theoretical logic in the 18th and early 19th centuries**.**

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[2] The last characteristic gets its own meaning and the meaning of reflexion only through the first one, since, taken alone, it is not anything specific for reflexion. If our comprehension of Hegel is adequate, this is what he kept in mind when he introduced the notion of "external reflexion" and defined it as a purely formal action [5].

This statement of the problem compels us to get deeper into the analysis of reflexive connections and the activities combined by this connection. The reflected and reflecting positions can be combined either on the level of consciousness (the case that has often been discussed by philosophers), *or* on the level of the logically normalized knowledge. In both cases, integration can be done either on the basis of the means of reflected position (the «borrowing» and the «borrowed positions» [11]), or on the basis of the specific means of a reflecting position (a reflexive ascent of a reflected position). When the reflecting position produces its own knowledge, and yet does not have its own specific, externally represented means and methods, we can speak of semantic (pre-object) reflexion. If the reflecting position has produced and fixed its own particular means and methods and found appropriate ontology for them, i.e. arranged them into special scientific subject, we can speak of object reflexion.

These connections and arrangements of knowledge are each characterized by their special logic and methods of analysis. In this case, some forms and ways of connection retain the specificity of reflexive relation, namely, attribution of knowledge to certain cognition capabilities (in Kant's terminology), whereas others completely delete and remove all signs of reflexive relation. Although the above should be considered as a hint at a vast area of problems rather than as a description or presentation of some means and genetic principles of analyzing activity, this will suffice to understand how the concept of reflexive relations is used for the analysis of types of knowledge and their place in activity as well as for the analysis of the principles of the development of knowledge, which is largely independent of the development of activity.

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ON THE NECESSITY OF DISTINGUISHING BETWEEN THE CONCEPTS OF «REFLEXION SCHEME», «REFLEXION ACTIVITY», AND «CONTEXT OF REFLEXION»

© V.M.Rozin *(Russia)*

Institute of Philosophy,
Russian Academy of Sciences
Doctor of Psychology

Ideas and concepts of reflexion are currently used not only in philosophy and methodology but in other disciplines as well. Therefore, reflexion is often treated so loosely and vaguely that one might wonder whether all the authors refer to the same concept. Most researchers speak of reflexion as if it were a natural object (psychological ability, thinking mechanism, type of activity, etc.) that can be observed and described similarly to objects studied by a naturalist.

Meanwhile, analysis shows that reflexion is an unusual object: originally it comes into existence in the form of certain communication and explanation and only thereafter it is objectified and «naturalized». Let us illustrate this point with two examples, one related to the history of philosophy and the other from the history of the Moscow Methodological Society (MMS).

First example. Discussing the concept of the fundamental principle (Divine Reason or the Deity) Aristotle introduces in his «Metaphysics» the following scheme: «Moreover, reason being related to the object of idea, thinks of itself in contiguity and thinking, therefore, reason and what is thought by it are one thing» [1, p. 211]. At present, we consider it retrospectively as one of the first schemes of reflexion. Aristotle used this scheme to lock in and to substantiate his organon of knowledge and sciences in the presence of competing philosophical views. Moreover, Aristotle's system obscured the substantiation of the foundation on which his evidence rested. Introducing such a basis as the Divine Reason, which contemplates and thinks of itself, and subordinating the rest of the bases (of specific sciences) to it, Aristotle strengthened his system so that it could endure the criticism com-

ing from other philosophers. In this case it was necessary to substantiate the newly created system in an environment rich in philosophical competition and criticism. In this context the reflexion activity consists of interpreting philosophical and scientific thought as a manifestation of the Divine Reason («The Reason thinks of itself since we have the best in it». «And speculation is the best and most pleasant thing. If it is good for us, for God always, so it is wonderful: if it is better so it goes more wonderful» [1, p. 211, 215]).

Second example. As MMS was taking shape (in the second half of the 1950s and first half of the 1960s), the issue of the study of reason was raised by A. Zinoviev and G. Shchedrovitsky. The traditional methods, namely the method of formal logic and the psychological method, were rejected. Furthermore, MMS participants (like Aristotle or Kant before them) were not oriented towards solving mental paradoxes. Instead, they tried to employ the natural–scientific approach, historical and semiotic methods, and some ideas of Marx and L.S. Vygotsky. Investigation of the structure of reason was quite substantial and included *seminars (a collective mind), sharp criticism and discussions of every investigative step of speakers; consideration of alternative steps by other participants; formulation of principles of work and reasoning for the present instance and steps; schematization of the investigative steps that have survived the criticism and substantiation and of the results* [4]. This work was later perceived as the reflexion of collective reasoning. Why as reflexion, not anything else?

The analysis of these and some other cases shows that all three components of reflexion (schemes, work, and context) may differ considerably. So what defines the essence of reflexion? First of all, it is *a special type of communication and activity.* Reflexion implies a possibility of conceiving (describing, schematizing) the given material from a different plane. This, according to Mikhail Bakhtin, is only possible from the position of «outside-being», i.e. a particular method of communication, for example, «Me and Another», «collective activity and criticism», «Me in one position, and Me in another one» etc. Secondly, reflexion *aims at the development and change, it is productive reasoning* etc., which is at variance with the goal of reproducing the created working methods. Third, reflexion implies a *specific explanation of its own activity and reasoning , namely, in the reality of action and development.* Comprehension of this reality in the context of a certain scheme of thought development is constructed on the basis of the reflexion scheme.

A reflexive explanation of development implies on the one hand **universummalization**, that is the prescription of a whole that *combines both the developing matter and the mechanism of its development.* On the other hand, it implies a particular logic of *the natural and the artificial* when **the natural is explained by way of the artificial and vice versa** [2; 3]. Although this explanation of development is used widely in the methodology of philosophy

and some sciences, it is, in fact, irrelevant and, therefore, the real factors and mechanisms of development, such as problems, communication, collective activity, schematization, objectification, naturalization, etc., are interpreted by way of transformed forms [2; 3]. For example, how can one understand, from the viewpoint of cultural and historical reconstruction, Aristotle's statement that in the process of thinking he simply reproduces the divine model of Reason's self-thinking? Let us return to the analysis of Aristotle's work.

Attributing such a property as unprovability to the bases of his reasoning, Aristotle focused his attention on the traditional practice (every thinker assumed something as a basis and the remaining knowledge is proved by using this principle) but, at the same time, he came to the apparent conclusion that there is no way of going into endlessness without stopping somewhere. Nobody can prove this latter principle. But what is to be done with the bases themselves and what is the way to be convinced that they are true? This is a difficult question. Part of the answer is obtained by Aristotle through the reflexive practice of constructing the basis: it is carried out by means of generalizing the empirical material that characterizes a certain object.

But this is no more than a part of the answer. The bases construct an object as such; consequently they are elements of the latest whole outside of which there is nothing. But the latest whole (as was noted by Fales earlier) is God or the objectness («the All-Embracing»). Correspondingly, Aristotle applies two categories to these two forms «Reason» and «Unity». Proceeding from this assumption, Aristotle interprets all bases as belonging to a single whole (the Divine Reason) and aspires to use all knowledge and all sciences to construct a perfect world managed by reason («By the way, Aristotle says the world does not want to be managed badly. Government by many is not good: let us have a sole sovereign» [1, p. 217]).

But what is the way to connect Reason with concrete bases if there are many of them and they differ from each other? In order to overcome this hurdle, Aristotle introduces intermediate bases or categories (essence, essence of being, type, kind, quantity, quality, cause, form, matter, nature, much of, possibility, reality, ability, ownership, deprivation, etc.), which are used as building blocks for sciences. For example, according to Aristotle, things are created as based on the essence of being, form and matter, having relations to a certain type and kind. The change (movement, growth, disease, etc.) is created as based on the essence of being, form and matter, possibility, ability, reality, quantity, quality, state. In Aristotle's system the categories are higher than the bases, but lower than Reason («The Unity»).

By bringing the movement to the initial points, i.e. bases, we may say today that Aristotle partially reflexed his own position in relation to other thinkers. Aristotle prescribed them certain rules and models of reasoning.

On whose behalf did he speak? He spoke on the behalf of the Divine Reason, order, and goodness. The next question: what is the Divine Reason? Since Aristotle himself spoke for the Divine Reason, he answered the question about the function of the Divine Reason, reflexing his own activity. What does Aristotle do as a philosopher? First of all, he thinks. Second, he gives orders to other thinkers, i.e. he thinks (normalizes) their reasoning. Consequently, the «Divine Reason» is «thinking about thinking» i.e. the reflexion and contemplation (discretion, «speculation» about new knowledge and bases).

Such was Aristotle's line of reasoning. Did he realize that his position was related to the views of Reason? Probably not. But, in any case, Aristotle constructed a system of reasoning that substantiated his position and activity. Consequently, Aristotle had to determine the hierarchical relations in reasoning itself: some sciences and bases are subordinated and the others are managed (primary philosophy, primary bases). If «secondary» sciences and bases (the «secondary philosophy») are substantiated in the primary philosophy then the latter are self-substantiated in the case of a philosopher proceeding from the position of goodness and the Divine Reason. Eventually, a philosopher acts as a poet under the influence of a muse since he does not act by himself but rather as the Divine Reason. The correctness of his models could be ensured, if he proceeded from Unity, goodness, and the Divine [5, p. 35-163].

Surely, the application of reflexion alone without taking into account the traditional relations in the person's mind was not sufficient since every leading philosopher considered himself to be wise, and, therefore, divine. Aristotle's system would not have been so substantial and powerful if it had not included the effective principle of organizing and regulating all thinking material, all the knowledge obtained from an appropriate position. All thinking material was organized and regulated, first, according to a fixed hierarchical relation, second, in view of the requirement that all positions (except the basis) need to be proven, and third, in connection with conforming to the rules of true reasoning (thinking). These rules themselves were made to avoid contradictions and, simultaneously, to assimilate the body of practical and empirical knowledge obtained within the frame of thinking.

Considering this reconstruction, one should take into account the fact that the reflexion scheme outlined by Aristotle, on the one hand, was not adequate from the modern point of view, because it did not reflect the real situation and Aristotle's works; on the other hand, it was fully adequate since it provided the required basis and understanding of philosophers' work for Aristotle and other philosophers of that period. Moreover, the philosophers persuaded by Aristotle that the Divine Reason acted through

him started following that scheme. In modern terms, one could say that these philosophers practiced reflexion.

The presently available material allows us to identify four basic stages in *the life cycle of reflexion.* The first stage may be defined as «pre-reflexion», the second, as the stage of «reflexion schematization», the third stage – as the «objectification and naturalization» of reflexion, and the fourth as the stage of «reflexive cognition». Construction of reflexion schemes («thinking about thinking» and «reflexion of activity») as well as their application to comprehension and substantiation of real work are examples of reflexion schematization. The transformation of reflexion schemes into objects of research, their use in the capacity of ontological schemes, and even of reflexion models are examples of objectification and naturalization. Incidentally, this stage allows us to form proper «reflexion abilities».

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EVENT TRANSCRIPTION OF REFLEXIVE PROCESSES *

© V. A. Petrovsky *(Russia)*

Russian Academy of Education
Doctor of Psychology

By *event transcription* of the statements of Lefebvre's reflexive algebra I shall mean the use of symbols of a formal language that can describe reflexion in the capacity of a real act («event») and as a dynamic unity of its sides, namely the source and the content of reflexion («co-being» of a real act).

Why is such a transcription desirable? In our opinion, the potential of Lefebvre's reflexive constructions, in particular his early work, is obvious to everyone who was involved in the «reflexive movement» initiated by founder of School. Event transcription is part of the process of the «self-actualization» of his ideas. The need for the event transcription of Lefebvre's reflexive multinomials is defined by practical interests (the use of the reflexive theory in related *fundamental sciences*, psychology in particular, is one of the important *applied* aspects of this theory).

We shall start with the simplest form of Lefebvre's reflexive multinomial $(1 + x)$ and the corresponding condition of a reflexive system

$$T(1 + x) = T + T x .$$

Here, the symbol *«T»* is a springboard; *«Tx»* is a springboard from the position of *«X»*. Symbol «+» unites objective (physical) and subjective (psychical) aspects of reflexion, which is realized by the character *X* with respect to the springboard *T*. These initial symbols are used in a modified version of Lefebvre's reflexive algebra.

As was noted earlier, the algebraic expression $T + Tx$ may be interpreted in terms of Hegel's *idea* as the unity of the reflected object and its reflexive appearance. The fact that such formalism is possible at all is extremely

important for sciences dealing with correlation between «the subjective» and «the objective», first of all, for psychology. It seems that we will make a step towards the interpretation and formalization of the results produced by applying reflexive operators $(1 + x + ...)$.

A formal arrangement of «internal universes» of characters. The algebraic expression $T + Tx$ does not seem to contain any evident information about the «internal universe» of the character X, and about the position of the character X as the «carrier» of reflexive shape T. So, paradoxically, the object of reflexion *is present* (it is springboard T), the shape of reflexion *is present* (it is Tx), but at the same time, the subjective consciousness and objective substance of the «extent» of the existence of the reflexive shape *are absent.* This paradoxical situation changes when the operator of reflexion becomes more complex, for example, when it has the form: $(1 + x + yx)$. In such a case, the character X gains his «internal universe» in which the shape T begins «to live» together with the shape Ty and, besides, *«x»* appears in the role of a carrier of universal shapes (shapes of the «springboard» T). Note that now the «internal universe» of the character X is described by the parenthesized expression in the right side of the equality:

$$T(1 + x + yx) = T + Tx + Tyx = T + (T + Ty)x.$$

Comparing the reflexive systems described by the operators $(1 + x)$ and $(1 + x + yx)$ we notice a fundamental difference in their structure: in the first case, the symbols of the internal universe and the carrier of the internal universe are absent, and in the second case, the symbols and the carrier are present. An obvious question is whether one should simply accept this paradox as a «fact of life», or make an attempt to develop means that will allow him/her to **uniformly** represent the state of a reflexive system regardless of the level of the complexity of the realized operator.

Limitation of marginal language prerogatives. The need to find a new formal representation of reflexive systems' state is motivated by the need to align the symbolic and textual (lexical) rows in reflexive constructions. Actually there are three languages of Lefebvre's reflexive theory, one of which is a flawless formal language (the language of symbols with logical and mathematical relations defined on these symbols). Then there is a metalanguage, which explicates the meaning of symbols and relationships of the formal language. Finally, there is an intermediate, marginal language used by the creator of the reflexive algebra to develop *logical* explanations of the logical and mathematical relationships represented in the formal language. To prohibit the use of such a marginal language by an emerging theory would be sheer nonsense, a symptom of maniacal obsession. Furthermore, I think that we will be able to recognize a developing theory by the distinctive mark of the presence of a marginal language. However, I

believe that this marginal language is sometimes over-used in the reflexive theory, which may on some occasions hide the need for any further development of the formal language[1].

An example of event transcription. First we propose a very simple solution in order to put the algebraic expression

$$T + Tx \rightarrow T + \{ (T)' \} X$$

in place of the expression $T + Tx$, and secondly, to open the parentheses in the expression $\{(T)'\}X$ combining two components, $\{(\underline{T})'\} X$ and $\{(T)'\} \underline{X}$. Let us first explain the statement $\{(T)'\} X$. This statement is *italicized* and reads: «Shape T in X and with X». This describes the contents of the internal universe of the character X and specifies the presence of the shape T, with X in internal universe of X.

This statement uses three new symbols, namely: braces *{ }*, parentheses *( )*, and the «tick» mark (*'*). Moreover the letter «*x*» is consolidated to the right of T (in accordance with the traditional notation) and it is transformed in X. Note that the whole statement on the right side of the above statement (including T) is italicized

The **braces** show that the statement represents the internal universe of X. The **parentheses**[2] state that we are dealing with the existence of some *event,* which describes the element T (that is T is considered as a whole). And the **tick mark on the right of the parentheses** indicates that it represents the *shape* of the event. **By sing the uppercase letter** X we emphasize the peculiar significance, which is attached to the character X: it appears in the role of the *subject and the carrier* of the shape T at the same time.

Italics are used to prevent confusing the initial and modification statements. Now let us explain the operation of ***underlining***. It marks the fact that we extract the corresponding «part» from the algebraic expression (the operation of «abstraction»): so the algebraic expression $\{ (\underline{T})' \}X$ may be read as follows: «the shape T in internal universe X», and expression $\{ (T)' \}\underline{X}$ may be read as: «X in the role of the subject and the carrier of shape T». Let us now record the steps taken:

$$T(1 + x) \rightarrow T + \{ (T)' \} X = T + \{ (\underline{T})' \} X + \{ (T)' \}\underline{X}.$$

This expression gives us an ***example of the event transcription*** of a ***reflexiveve system***; resulting from the application of the reflexive operator $(1 + x)$

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[1] Marginal language is a peculiar challenge for those who work in the genre of scientific theories popularization and attempt to apply it for the solution of urgent problems. In this case popularization can result in oversimplifications and deliver a blow to the image of the theory (for example, as it took place with ideas of Eric Bern, the brilliant creator of transaction analysis).

[2] V.A.Lefebvre uses brackets *only* when he unites «rhyming» elements *Tx* and *Tyx* (that is he realizes the procedure of taking out the observer *X* from the brackets).

to the springboard *T*. Now we can take another step, which will help us characterize the resultinng transcription of the state of a reflexive system.

Setting $\{ (\underline{T})' \} X = (T)''$, and $\{ (T)' \} \underline{X} = X$, and $(T)' = T''$ we obtain the expression $T + T' + X$ which gives us an example of the sought reflexive system. Thus,

$$T(1 + x) \to T + \{ (T)' \} X = T + \{ (\underline{T})' \} X + \{ (T)' \} \underline{X} = T + T' + X.$$

We conclude that event transcription allows describing the content of the internal universe of the character *X*, and the final transcription represents reflexion from the position of a universal observer. This approach can noticeably modify the process of recording the states of reflexive systems.

The results obtained express a fact of reflexion undertaken by the characters *X,Y,Z,…*, and in particular the organization of the «internal universe» of each character by taking into account the probable convergence of reality *T* and shapes of this reality in the consciousness of the characters[3]. It captures the fact that *X* is able to possess a *shape Y*. Being part of the internal universe *X*, the shape *Y* is not identical to *Y*.

Event transcriptions and the «me» category. Let us consider how the proposed system can be applied to the area of the psychology of «me». Lefebvre's reflexive logic provides us with remarkable opportunities to apply them to the areas of psychology that are relevant for us. As long as the question is just about the «me» category (defined as «individual's self-reflexion»), we shall have to deal with an absolutely unique situation, when the «springboard *T*» and the reflecting «character *X*» are *a single entity*. Therefore, we have the right to represent these two elements with a single symbol. Let us use the «little man» icon in the role of this symbol. Thus we can use the algebraic expression 👤 $+ \{ ($👤$)' \}$ 👤 instead of $T + \{ (T)' \} X$.

Note that the following identity is true:

$$👤 + \{ (👤)' \} 👤 = \{ (👤)' \} 👤 ,$$

since $\{ ($👤$)' \}$ 👤 is a combination of $\{ ($👤$)' \}$ 👤 and $\{ ($👤$)' \}$ 👤 , thus we can eliminate an excessive element. The expression $\{ ($👤$)' \}$ $\overline{👤}$ may be interpreted as a *unity of an individual and of his reflexion representatives in his own consciousness.*

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[3] Let's cite one more example of event and concluding transcription:
$T(1 + yx) \to T + \{ (\{ (T)' \} Y)' \} X = T + \{ (\{ (\underline{T})' \} \underline{Y}' \} X + \{ (\{ (T)' \} Y) ' \} \underline{X}$ (event transcription) =
$= T + (\{ (T)' \} Y)' + X = T + (\{ (\underline{T})'\} Y + (\{ (T)'\} \underline{Y})' + X = T + ((T)' + Y)' + X = T + (T)'' + Y' + X =$
$T + T'' + Y' + X$ (concluding transcription). It is important to note taking into account postulated conditions that the expression $\{ (\{ (\underline{T})' \} \underline{Y}' \} X + \{ (\{ (T)' \} Y)' \underline{X}$ can be recorded simpler (without parentheses), namely: $\{ \{\underline{T}'' \} \underline{X}' \} X + \{ \{ T'' \} X' \} \underline{X}$. It is important for explanation of architectonics of event transcriptions.
The last expression can be simplified as: $\underline{T}'' \underline{Y}' X + T'' Y' \underline{X}$ by eliminating braces.
Thus $T(1 + yx) \to T + \{ (\{ (T)'\} Y)' \} X = \underline{T}'' \underline{Y}' X + T' Y' \underline{X} = T + T'' + Y' + X$ (this «sum» is generally speaking not commutative).

The above record can be expressed otherwise when we underscore that we mean the *shape of an individual existing in the individual himself and the shape of an individual is considered jointly with that individual* (compare this description with descriptions given above that have more abstract character: *{ (T)′} X* – this is the shape *T* in *X*, which is considered jointly with *X*).

The result is the simplest definition of «Me»:

$$\text{«Me»} = \{\ (\ 🧍\ )'\}\ 🧍\ .$$

It is important to remember that objective and subjective roles of «Me» may be marked as some «aspects» in this fundamental definition of «Me». In particular, the expression *{ (🧍)′} 🧍* will mean for us that the question is about an individual as a *source* of self-reflexion. The concept of the «source of self-reflexion» can be defined in detail by means of marking such aspects as object, subject, and carrier of reflexion. A symmetrical record, namely *{ (🧍)′ } 🧍* indicates the *content* of the self-reflexion of an individual; the content can be defined by means of marking the shape, product, and possessions[4] of reflexion. Thus the record *{ (🧍)′} 🧍* can be expressed as a sum of two records:

$$\{\ (\ 🧍\ )'\}\ 🧍 = \{\ \{\ (\ 🧍\ )'\}\ \underline{🧍} + \{\ (\ \underline{🧍}\ )'\}\ 🧍\ .$$

Adding the arguments we have:

$$\text{«Me»} = 🧍 + \{\ (\ 🧍\ )'\}\ 🧍 = \{\ (\ 🧍\ )'\}\ 🧍 = \{(🧍)'\}\ \underline{🧍} + \{(\underline{🧍})'\}\ 🧍\ .$$

Formulating these relationships we proceed from the assumption that the little man 🧍 can be related to himself as the *subject* and the *carrier* of reflexion { (🧍)′} 🧍 as well as the *object of reflexion*: 🧍 .

Let us now focus on the two expressions that determine «Me»: *{ (🧍)′} 🧍* and *{ (🧍)′} 🧍 + {(🧍)′} 🧍*. The first expression describes «Me» as an *event,* as an act of individual's self-reflexion. The second expression describes «me» as a *co-being,* his co-existence as the source and the content of reflexion.

These arguments can be expanded to deal with more complicated varieties of «Me». The event transcription allows to express the essence of its internal structure.

Let us bring the expression $X\,(1+ xw \ldots yx)$ to conformity with the expression $X(X^{(n)} W^{(n-1)} \ldots Y^{(2)}X^{(1)})$ and equate the last expression with the expression $X^{(n+1)} X^{(n)} W^{(n-1)} \ldots Y^{(2)}X^{(1)}$. In this case, n – is a number of elements in initial record $w \ldots zyx$; then every pair $\ldots V^{(k)} U^{(k-1)} \ldots$ is interpreted as «shape of characters V in characters U where the shape of character V is taken together with X. X is the carrier, object and subject of its shape. These descriptions can be extrapolated for all kinds of reflexive operators.

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[4] One may use the more common word «being» instead of «possession».

By introducing supplementary logical-and-symbolical construction we can describe and strictly define such forms of «Me» as the autonomous «Me» (it is defined as $X^{(n)} \ldots X^{(2)} X^{(1)}$), social «Me» ($X^{(n)} W^{(n-1)} \ldots Y^{(2)} X^{(1)}$), integral «Me» (combination of «autonomous» and «social» «Me»).

We can elaborate notions that form every marked category, for example, autonomous «Me» appears as a cascade of ideas connected with each other by means of recursive relationships; *«Me» as such* ($X^2 X^1$), *available «Me»* ($X^3 X^2 X^1$), and *mental «Me»* ($X^4 X^3 X^2 X^1$).

The event transcription of a reflexive system state can be split and reassembled. Suppose that the event transcription contains 32 elements – as in the Russian alphabet:

$А^{(32)} Б^{(31)} В^{(30)} \ldots К^{(21)} Л^{(20)} М^{(19)} Н^{(18)} \ldots Э^{(3)} Ю^{(2)} Я^{(1)}$

It can be presented, for example, in the form like this:

$А^{(32)} + Б^{(31)} В^{(30)} \ldots К^{(21)} Л^{(20)} М^{(19)} Н^{(18)} \ldots Э^{(3)} Ю^{(2)} Я^{(1)}$
or
$А^{(32)} Б^{(31)} В^{(30)} \ldots К^{(21)} Л^{(20)} + М^{(19)} Н^{(18)} \ldots Э^{(3)} Ю^{(2)} Я^{(1)}$
or
$А^{(32)} Б^{(31)} В^{(30)} \ldots К^{(21)} Л^{(20)} М^{(19)} Н^{(18)} \ldots Э^{(3)} Ю^{(2)} + Я^{(1)}$
or
$А^{(32)} Б^{(31)} В^{(30)} \ldots К^{(21)} + Л^{(20)} + М^{(19)} + Н^{(18)} \ldots Э^{(3)} Ю^{(2)} Я^{(1)}$
or
$А^{(32)}+Б^{(31)}+В^{(30)} +\ldots+ К^{(21)}+Л^{(20)}+М^{(19)}+Н^{(18)} +\ldots+ Э^{(3)}+Ю^{(2)}+Я^{(1)}$

This property is quite unique: the «product» of elements turns into an aggregate of the «sums» of «products» (finally, of elements). This property is the compensation for the violation of the commutativeness of the reflexive transcription.

«Living symbol» of idea. Let us discuss the meaning of the symbol «+». It does not represent addition or unification but is rather a symbol of change and transformation. It is a «natural symbol» of artificial origin. This symbol functions in accordance with the natural laws of perception but is created by means of culture.

The parentheses **on the left** point to the objective aspect of the existence of a reflexive individual (🛉); and the parentheses **on the right** point to the subjective aspect of a reflexive individual's (🛉′) existence.

This figure has amazing characteristics. The sides of the cube come forward then step back in the struggle for leadership with other sides. Nekker's cube is the «living symbol» as though it were intentionally planned by nature to be an incarnation of «me» as the idea of a self-reflexive individual. A similar incarnation can take place only in the process of the «living symbol» transitions. I think the «living symbols» are the mode of existence

of an idea, in particular, of the idea of oneself, which is inherent in an individual.

An individual as a *source* of self-reflexion (object, subject and carrier) shifts positions with himself and turns into *a phenomenon* of self-reflexion (shape, result, possessions): the pulsating physical, objective and subjective categories transform into each other.

«Me» = Individual in self-reflexion
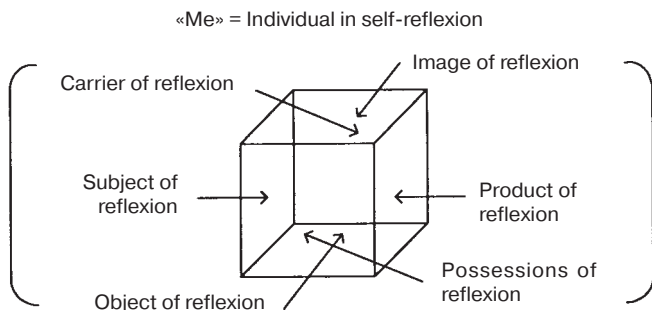
«Living symbol» of Idea

Now we can describe the «Me» category as an event and a co-being, using Nekker's cube instead of the symbol «+» (as far as the unique properties of Nekker's cube and its logical status are not realized by creators of computer systems, we substitute it for symbol «ℵ»):

$$\text{«Me»} = \{\,(\,\text{⛎}\,)'\} \,\text{⛎} = \{\,\{\,(\,\text{⛎}\,)'\}\downarrow\,\text{⛎}\,ℵ\,\{\downarrow(\,\text{⛎}\,)'\}\,\text{⛎}\,.$$

Using the event interpretation of reflexive phenomena we provide a self-reflexive character with his own «internal universe» (this is self-reflexiveness which is symbolized by the expression $\{\,(\,\text{⛎}\,)'\}\,\text{⛎}$ and corresponds to the initial expression *Tx).* This representation would be impossible if we were limited to the use of the «non-event» form of reflexive symbolism.

In conclusion, let us note that we have considered only one of the problems of the reflexive theory, the problem of event transcription and related forms of reflexion in the context of the psychology of «Me».

Discussion

V.M.Rosin
(RAS Institute of Philosophy, Doctor of Psychology)

Vadim Petrovsky proposes an event transcription mechanism for Lefebvre's theory. He argues that such transcription is necessary, on one hand, to take advantage of the «possibilities contained in reflexive constructs» of this theory and, on the other hand, «in the interests of practical application», first of all, in psychology.

Petrovsky emphasizes two different ways of describing reflexion: in the first case the symbols of the internal universe and its carrier are absent, and in the second case these symbols are present.

Further, he discusses the use of three different languages: a flawless formal language, consisting of symbols and logical-mathematical relations between them, a meta-language, which explains the meaning of the symbols and relationships of the formal language, and an intermediate language of «built» specifications, which is characterized by Petrovsky as a marginal language in Lefebvre's reflexive theory.

From Petrovsky's standpoint we «sense a surplus (or excessive marginal language) of the marginal language, which conceals the need for the formal language to evolve» in Lefebvre's reflexive logic. Petrovsky says that event transcriptions are needed to overcome this excess. And further, moving from methodological explanations to practical matters, Petrovsky gives a concrete example of such event transcription allowing us to see and understand the «Me» category defined by Petrovsky as an *«individual in self-reflexion»*).

In principle, nothing should prevent Vadim Petrovsky from expanding Lefebvre's theory. It is necessary to define how he realizes his own innovations. Lefebvre's theory is fully completed, *if it is used for the solution of the problems it is created for.*

«The excess of the marginal language» or the «possibilities of Lefebvre's theory» appear when the problems change. In fact, Petrovsky endeavors to solve absolutely different problems by using Lefebvre's general ideas. It is clear that the psychological analysis of «Me» requires new ideas and new symbolism, but *Petrovsky's understanding of psychological cognition* essentially differs from the views of Lefebvre. Naturally, it will be simpler to embrace the existing popular paradigm and sincerely believe that event transcription is a continuation of Lefebvre's theory but it is doubtful whether this is true.

First of all, using Lefebvre's language and some of his ideas, Vadim Petrovsky creates a theory of his own. Eventually, Petrovsky has to declare that his new ideas surmount Lefebvre's ideas and that it is possible to create some metatheory where Lefebvre's theory and the theory created by Petrovsky will be represented as two special cases. Instead, Petrovsky states that he is only improving on Lefebvre's theory. In this case he has created an unnecessary aberration.

Lepsky V.E.
*(RAS Institute of Psychology,
Doctor of Psychology)*

V.A. Petrovsky's article is written on a good professional level and is devoted to the important problem of the development of a formal language for the theory of reflexive processes. In fact, determining the correspondence between the objective universe and a model of this universe from the position of an external observer is one of the main unsolved problems of the base theory.

Any proposals related to formalizing the statement of such a problem deserve consideration. From my viewpoint, Lefebvre's approach is the most successful one, since Lefebvre's symbols T, Tx, Txx automatically determine the existence of a discrepancy between different models. It is clear that the model form of the universe *(Tx)* and the model form of the universe *(Txx)* can not be identical in accordance with Lefebvre's rules of the game.

Petrovsky's language resembles Lefebvre's language, but Petrovsky's is more complicated and requires additional special commentary. Thus the author brings the expression $T + Tx$ to conformity with the expression $T + + \{(T')\}X$. He uses a much greater volume of commentary than Lefebvre does and he loses the universality of the «realizing» operation. Strictly speaking, such transformation looks artificial as T' was not defined earlier.

Further, the author renders Lefebvre's logic meaningless by introducing additional elements: braces, parentheses, etc... (the simplest programming language have much smaller command sets). *{T} X* is the shape *T* in *X, {T} X* is the subject *X* as a carrier of the shape *T* in Petrovsky's symbolism. This distinction can be expressed in a simpler way by using Lefebvre's symbolism. The shape T in X is Tx, and the subject as a carrier of the shape *T* is brought to conformity with the expression $T + Tx$.

In conclusion I want to note that Petrovsky's article is only one of the special commentaries on reflexive polynomials.

REFLEXIVE PROCESSES IN ECONOMICS AND POLITICS

STRATEGIC FORM OF REFLEXIVE CONTROL IN THE CONTEXT OF SITUATION IN RUSSIA

© O.S.Anisimov *(Russia)*

Civil Service Academy at the Office of the President of the Russian Federation. Doctor of Psychology

The professional activity of a manager can be assessed according to the levels of professionalism depending on a certain system of criteria to define the specifics of each level [4; 13; 14; 15; 18]. Since we are guided by the activistic approach and by the concept of activity developed by methodologists represented by the Moscow methodological group (MMG), we will suggest the simplest ways of determining these levels. They will be used to evaluate the current condition of strategic thinking and activity as well as its ability of professional implementation.

The simplest typology («hierarchy») of levels includes, from our point of view, the following levels: «dilettante», «routine», «innovational», and «criteria-innovational». The involvement in the realization of the activity norms of a person who does not realize the necessity of matching his or her capabilities to the requirements of fixed (actual and potential, concrete and abstract) norms of activity, lies at the core of the dilettante level. A dilettante begins to solve problems without checking the inner ability needed for solving these problems, without the disposition to correct this ability if it does not meet external normative requirements.

The routine professionalism is characterized by realizing the necessity of the above-mentioned correspondence and by the readiness to adjust one's abilities with respect to the fixed norm. Moreover, what is especially important, a concrete norm, a «goal», is considered. This goal has a ready solution. That is why for realizing the routine level of professional activity we need standard problems, a minimum number of which allows the achieving of fixed goals, if managers possess the required qualities.

The innovational level is characterized by the necessity of correcting the goal content within the limits of old or new goals. That is why a manager should have the abilities (motivational, intellectual, volitional, etc.) for moving from one content of goals to the other. In the case of the criteria-innovational level, the movement from goal to goal is carried out through the criteria of the intellectual (theory, concept, category, conception) and spiritual (ideal, values, worldview, and attitude towards the world) types. While using the intellectual criteria innovationally, such norm types as «method», «approach», «principle», and «strategy» get evolved [3; 5; 8; 9]. Under these conditions such important units of thinking as «defining the issue» and its outward expression – the «problem» appear, as well as the distinction between the «goal» and the «problem», transition from a goal to a problem. The main cultural forms of organizing thought are formed – the «goal form» and the «problem form». In particular, a «strategy» cannot be developed without using both groups of criteria [9; 10].

A question arises whether we have strategists at the routine or, better, at the innovational or criteria-innovational levels? Our answer is no. It can be explained in a very simple way: higher and more advanced education does not aim at preparing specialists based on professionalism. The goals that are characteristic of thinking strategically about a problem are not singled out or typified. The inner assumptions of those managers, who are involved in strategic thinking in a practical way, are not adjusted to the requirements of standard problems [5; 6; 7; 22].

A survey of the abilities and activity levels of individuals who create strategies was carried out in the 1980s and 1990s through a special procedure called «organizationally-active games» (OAG) [1]. The results of this diagnostic procedure permitted making a more sweeping conclusion about the prevalence of the dilettante level of professionalism throughout the whole body of managers.

These results were obtained despite the natural processes of practical, non-regulated adaptation to the management conditions, the formation of spontaneous stereotypes, and the achievement of «success» among the more talented individuals.

This verdict, which may seem controversial, is based on a system of criteria different from the commonly used ones. Accumulating knowledge and spontaneous skills in itself cannot be regarded as a sign of emerging professionalism, even at the routine level. These processes do not take a dilettante to a higher level of professional activity. And, in fact, if we refer to the content and form of fixed problems and their standardization, a direct foundation is needed for these problems to appear. This foundation can be a general idea about the management activity, emphasizing this idea in the content, a system of questions («unknowns») and a search for an-

swers («sought for») in accordance with corresponding actions within the limits of several answers. In order for this thinking and acting cycle to exist, one will need an «activity theory» built on the reliable foundation of the «language of the activity theory».

The analysis of game practices has shown that most managers do not possess a system of theoretical and practical ideas, do not know the language of the activity theory as a system of managers' professional means. And it is the manager who is responsible for constructing and reconstructing his own activity and the activity of his subordinates [3; 4].

Can we imagine a professional mathematician without his specific language and the system of thought typical of mathematicians? The area of management attracts most diverse skills taken from different fields of knowledge and language means. That is why no consulting organization that does not possess the means of the activity theory can be professional, since its representatives refer not to a language typical of the world of activity but to the content that comes from practice, from various fields of knowledge. They also refer to the creative work of their thought, while it is not submitted to its functions of activity or typifying the activity.

As a rule, they do not know about the proactive worldview and attitude, the paradigms of concepts and categories in the relevant language, general cultural requirements for a language, typical cultural forms of thinking, etc. They are ignorant of the situation in the culture of thinking and in the reflexive analysis of reality, and they are reluctant to acquire and apply them (especially the culture developed in MMG). But moreover their attitudes towards the attempts to introduce the forms and means of these cultures into the sphere of management are extremely negative.

Game modeling was practiced during two decades in the form of OAG, in which the problem of «natural forms of reflexion» was the main component. It has shown that among the many things that cause a manager to oppose the transmission of thought and reflexion from the «natural» (dilettante) level of professionalism to the «artificially-natural» (professional) level, the following can be singled out:

Firstly, it is quite a peculiar *intellectually normative professional «nihilism»*. The value and practical necessity of the following normative instructions are not questioned, in fact, they are often stimulated by the game. However, adjusting abilities to the activity norms is considered mostly to be the task of subordinates. As a result, a manager somehow becomes convinced that the concept of management is extremely flexible, creative, and unpredictable, while normative limits provide some general orientation and do not dictate anything;

Secondly, there exists a dominant belief that *the fundamentals of management cannot be left to technology*. Organizational work is mainly of a secondary

nature (for example, time-management). Instead of the technological devices, which require that abilities correspond to their content, stereotypes and «experiences» begin to play a more important role. During recent reforms, Russia was flooded with foreign books on management and economics that were considered to be superior to the local sources. But most often these sources lack the «problem» approach and deal mainly with huge amounts of heterogenic information. Moreover, all this knowledge is not supported by the activity theory and is based on the empirical sketching of experience;

Thirdly, unlike their foreign colleagues who have adapted to the social and cultural experience of the spontaneous reflexive self-organization, *Russian managers* have become more *spontaneous in reflexion*. Moreover, they consider the reflexive self-organization to play a secondary, unimportant role, which gets in the way of successfully achieving the goal.

Everything mentioned above is revealed most clearly in strategic forms of management. In order to evaluate the negative impact of these ideas and the inner readiness in developing and implementing strategies, we need to address the concepts of strategy and strategic thinking. The phenomenon of strategic planning is discussed most frequently. V.V. Trayer, A.M. Kashirin, and Y.M. Shvirkov consider strategic planning to be a «special kind of activity that consists of preparing the projects of strategic decisions... whose implementation will maintain their (households', authorities', federation members', and states' as a whole) efficiency in the long run, taking into account the alterations of external conditions» [20, p. 15]. It is important to stress that the development of strategy is considered in this case to be a special kind of activity, that has a projective character. Planning is aimed at the efficiency of functioning, the attention to the changes in external conditions, and the functioning of systems in the long run. O.S. Vihansky also singles out the long-term survival of an organization by «establishing dynamic balanced relations with the environment, which allows one to solve the problems of every person interested in the work of this organization» [12, p. 31].

A.E. Balabanov singles out the role of strategic planning in forecasting events, defining tendencies, and securing the unity of actions at different levels of a management system [11, p. 114, 239]. Moreover, strategic planning and management imply the formation of an idea and the name of an activity, their transition into the landmarks of managerial work on the basis of which management technologies are to be built [11, p. 240, 246]. That is why the system of strategic ideas must be «so general as to be able to contain differences without contradiction» [11, p. 239]. O.B. Alekseev believes that strategic management gets developed in the reflexive space of management technologies as opposed to the development of management

models [1, p. 15, 18]. It «allows us to connect various goals, various resources within the limits of one stream of activity» [1, p. 19].

We can see that strategy belongs to a special type of norms, to the abstract projects of activity aimed at durability, at the predictability of relations with the environment, at the endurance and stability of the system that is brought under the norms of activity. This system is viewed as a whole in which all actions at all different levels, using various resources, are coordinated. *Strategy is the foundation of the concrete rationing*.

I. Ansoff holds that strategy is «a set of rules for making decisions that an organization employs in its work ..., an instrument that can help under the conditions of instability» [2, p. 68, 74]. Strategy becomes «unnecessary, when events lead an organization to the aspired situation» [2, p. 69]. It is possible to disagree that strategy is directly dependable on the emergence of instability in an activity. One may consider that an organization as a whole needs a strategy whenever it intends to achieve new long-term goals. But it is even more important in a period of instability.

In the middle of the 20th century, the interest in strategy increased, although it has always been significant in the military and political circles. No wonder that many of its attributive characteristics were introduced by military thinkers. Recently, the number of works dedicated to strategic management has substantially increased. It would be enough to mention such authors as B. Queen, R. Freeman, I. Douton, J. Bryson, I. Pierce, R. Robinson, I. Geiner, A. Halden, F. Westley, H. Mintswerg, I. Marone, A. Chandler, B. Arnisin, etc.

A. Halachmi has developed a characteristic view. He believes that the «strategic management is expressed in actions directed at taking a maximum advantage of the organization's strengths, while using favorable conditions, both internal and external ones..., a strategic plan unites the goals of an organization, its policies and actions into one whole», as well as the backward connection. It also comes before controlling the actions of managers of a lower class, defining the important values and required results. This contributes to the standardization in decision-making by different people and subsidiaries, lowers the uncertainty of operations [21, p. 637]. The process of strategic planning itself consists of «research and survey of data, decision-making and evaluating, studying the consequences and relevance of the previous decisions» [21, p. 678]. A person carrying out reforms should head the planning process. This person should bring the maximum level of leadership and communication into an organization in order to overcome the feeling of resistance on the part of colleagues and to relax the tension [21, p. 687].

These characterizations of strategy and strategic management have one thing in common. They are empirical, and they form the experience of

real managerial actions without the context of the modern culture of thinking. If the culture of thinking and, in particular, the reflexive thought, is to be stressed, then the introduced evaluation of empiricism can be expressed in the following way.

The category «reflexion» is taken as the basic means of our analysis. In the 1960s, V. Levefre [16; 17] and his MMG students conducted research in this area. The objective environment of this research was the reflexion of MMG being itself, with the special emphasis on the reflexive organization and self-organization during discussions in the 1950s through the 1970s. Later, it was followed by the reflexive orientation of a game modeling mechanism in the OAG (since 1979) [22; 23]. We have carried out the conceptual reconstruction of the content of a management function within the limits of a pseudo-genetic method. It was shown that the management function is the result of singling out, forming, and providing for the second time of the reflexive service of achieving goals and implementing reality norms [3; 4; 10]. But while reflexion becomes a managerial type of action, the manager's activity itself becomes split into «actions» in the form of achieving goals and «reflexion of a managerial action» in the form of stating and solving problems. The perseverance of the reflexive keeping function in every new unit of the activity system allows underlining the substantial difference between the management that emphasizes action and the one that views reflexion as most important. V.Levefre expressed the second way in the formula of «reflexive control» [19].

The specifics of the current period in Russia's development is, as the technology of management sees it, a combination of instability, a chaotic choice of managerial means, and their implementation. It is also the external need for such «techniques» of managerial activity, which could ensure the launch into the stream of the world economy at the turn of the new millenium. Another approach would not allow us to rely on the safe mechanisms of the function-oriented management. And the value of the «launching» management lowers the importance of functional models in making and implementing managerial decisions.

Along with realizing the given situation, the content of the order is formed. It consists of practice, of forming or correcting the professional qualities of people who take and implement decisions. If the essence of such order is to be expressed conceptually, then a general feature of a management «technique» can be introduced that corresponds to the external conditions. It is that management should be reflexive. This means that not the set of strictly defined norms of thinking activity or the manager's psychocorrective, sociotechnical and other actions but the manager's reflexive self-organization is the focus of attention. Such a manager can adjust both to the fixed requirements of his superiors and to the easily recogniz-

able corrections of these limits. The same is true for a situation causing a
fast finding of the strictly defined but short-term rules of organizing a
managerial activity. In other words, a decision-maker has to find solutions
based on his/her own definitions. The whole managerial co-organization,
the whole organizational structure of an institute become dependable on
the dynamics and efficiency of the reflexive self-provision by a decision-
maker. Moreover, in order to promote independence from the quickly
changing conditions (both external and internal ones), a decision-maker
has to be supported by the capability of reflexive self-organization among
junior managers.

Reflexion is a crucial integral mechanism of developing normative re-
quirements for «his» or «her» activity by any specialist. It is also a mecha-
nism that creates a basis for defining the current activity, the norm being
implemented, since in this case the problem of previous experience is cen-
tral to reflexion. No wonder that when the role of reflexion grows and, in
particular, when the problem of activity and its norms is stated and reflex-
ion gains more importance, the responsibility for the process and results of
reflexion increases. In its outer form it means that the requirements for
non-accidental reflexion and for giving intellectual processes a cultural form
become more important.

Therefore, reflexion, as a specific mechanism, has three original func-
tions: reconstruction of what has happened («investigation»), reconstruc-
tion of the cause leading to a difficulty and of the dynamics of its «hinder-
ing» impact on the action («criticism») and reconstruction of an alterna-
tive way of acting («normalization»). These three functions express the trans-
mission from the past to the present through the boundary of two orienta-
tions preservation and alteration of an action. But these original functions
can be implemented in the N-form («natural», spontaneous, situational,
individual, etc.) or in the NA-form, in which the organizing part does not
yet play a crucial role, and in the AN-form («artificially-natural», culturally
dependent, not spontaneous, above-individual, above-situational, etc.).
A concrete condition of the transition from the NA to AN-form of reflex-
ion is the introduction of intellectual criteria (conceptions, concepts, cate-
gories, worldviews) and spiritual criteria (ideals, values). Intellectual self-
organization in this case should not only take them into account but also
submit to the requirements of the criteria. In this case there appears the
classical problem of adjusting and harmonizing the two sides of the use of
analytical means – the exact following of correctness in understanding the
content of criteria and adjustment of the content to a concrete situation
and concrete subject of analysis. The main problem of achieving the level
of the AN-form of reflexion, and later of the AN-form of management, is
in adhering to the criteria during its situational and concrete use. This prob-

lem is practical and it occurs in the process of educating managers. From our point of view, it leads to a sweeping reform of managerial education. The experience of rebuilding managerial education, an effort we have been involved in since 1988, has shown that quite distinctively [5; 6; 7].

Then our thesis about the empirical emergence of strategic management approaches can be stated as follows: these approaches exhibit the NA-type of analyzing strategic management. It was made more complicated by the fact that the knowledge itself, which serves as a basis for the analysts, has a syncretic character and is not supported by the specific language of the activity theory. To be more exact, as a rule, these differences have a pre-language character and are implemented in a proto-language based on sense schemes (see the differentiation between the concepts «sense» and «meaning» in the works of L.S. Vigotsky, A.N. Leontieff, G.P. Shchedrovitsky, and others).

The specifics of carrying out OAG is that they reflexively capture the actual ways of thinking, reflexion, means and ways of reflexion that are employed by participants. That is why the solutions of diagnostic problems and, later, the transition to corrective actions become simpler. By analyzing the actual managerial practice and its reproductive and productive modeling performed in a game, we created special models of the NA and AN-forms of reflexion in making strategic decisions (see dialogues *Strategies in Macroeconomic Management*, *Changing the Strategy of Governmental Management*, *The Paradigm of Continual Development*, etc. {6; 7; 8]. They contain characteristic ways of analysis and discussion both for real macromanagers and for the new type of analysts, who use the language of the activity theory but are not yet represented in the more responsible structures of making governmental decisions. We specifically highlighted the contrast between the NA and AN-forms of reflexion in order to emphasize the problem of improving the professionalism of managerial thinking and strategic management. A crucial change in managerial education and in the practice of the management of consulting services depends on the successful overcoming of empirical thinking and using the non-specific language means of reflexion. That is why we have started work on adjusting the mechanism of the educational explication of the language of the activity theory. Since its appearance in 2000, special educational cycles have started their work. They were designed in the OAG form and carried out the process of teaching the language of the activity theory and providing a pedagogical background, which guaranteed a good educational effect. A similar educational process was introduced in 1988 (a «module» of 2 or 3 weeks focusing on a single major educational problem and analysis and development of methods and means, which enabled a methodological analysis of decision-making). Besides, in 1980-1982 there was a program aimed at teaching the use

of the language means of the activity theory [6]. Since the success in solving a pedagogical problem depends on the motivational and intellectual readiness of students, the problem is in the extremely low level of conceptual and categorical organization in the thinking processes of real managers and analysts. Moreover, the status of conceptual thinking in the minds of modern managers is reduced to the area of using empirical ideas or to making a scheme of the syncretic subject of these ideas. That is why we not only introduce the initial experience of a logically and logical-semiotically organized mind but we also take into account the sum of fundamental requirements for concept thinking as reconstructed in Hegel's philosophy [10].

Let us return to the specifics of strategy and strategic thinking. Let us emphasize the most important characteristics of strategic thinking from the «list of attributes», which we have developed [8; 9], and, first of all, let us localize the function of strategic planning.

Two levels can be easily distinguished in any thinking – the inner (subjective) level and the outer (objective) one. In the first case, images and aspirations evolve and transform. In the second case, texts are generated by the semiotic systems «for others», and the volume and quality of the environment (natural and sociocultural) can influence a thinker.

Semiotic means as well as other linguistic parameters play an important role in organizing thought and the dynamics of the stable and changing images. The content (semantic) side of language thinking can also be organized. During the most important and problematically meaningful discussions (as the experience of MMG has shown) people use a method of outsourcing their inner images, «on the board» (a real chalkboard or its substitute, a sheet of paper). Let us give examples of non-image («structurally-logical») schemes, the usage of which also contributes to organizing the managers' thinking. Let us start with the functional structure of managerial activity (Fig. 1).
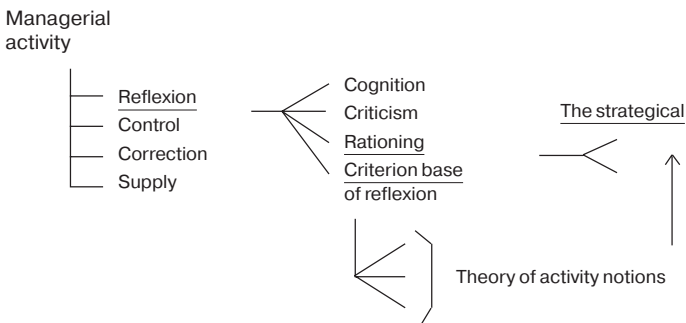

Fig. 1. *Functional structure of managerial activity*

Strategies appear on the projective «board» after a transition to the abstract types of planning the activity of organizational schemes (Fig. 2).
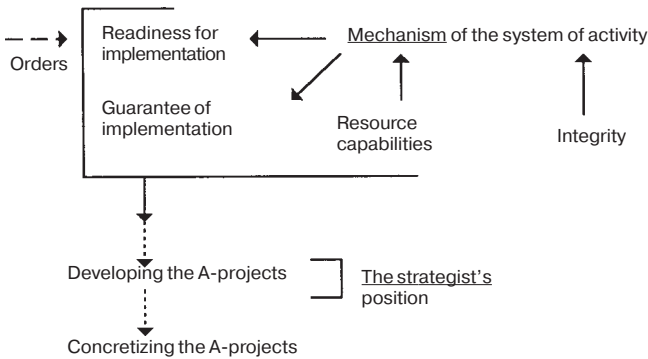
Fig. 2. *Functional position of the strategical*

It is the design of abstract projects (A-projects) of activity that is the basis of strategic planning. That is why the procedure and organization of making A-projects concrete are assumed.

However, contrary to what is written by analysts (see above), we assume both a technique and culture of thought that require a critical attitude towards the thinking abilities of a manager-strategist. In particular, a thinking manager should be able to handle questions and answers, subjects and predicates of thought units in two forms – the goal-oriented form and the problem-oriented one (Fig. 3).

Fig. 3. *The basis of managerial thinking technique*

The goals themselves are set for the system as a whole, depending on the goal and value orientations, external conditions and resource capacities. A strategist determines goals for the whole project (A-goals) and makes them specific for the system components (C-goals). In this way he prepares the implementation of a strategy (Fig. 4).

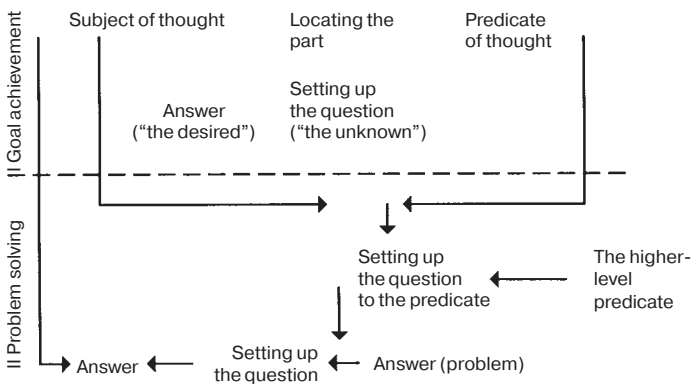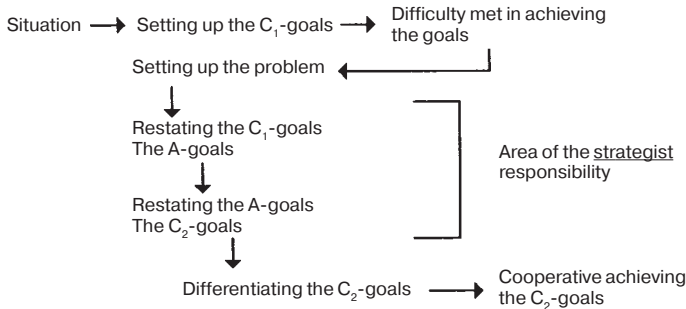Fig. 4. *The goal field of strategic control*

Responding to unexpected situations and difficulties that may require an attitude that takes into account the system as a whole turns out to be even more difficult. It is obvious that without his/her own language (the activity theory) a manager is bound to react spontaneously. Let us emphasize that we consider the major forms of thought culture and the concept-categorical provision of thought most important because the AN-forms of goals and problems, criticism, arbitration and organizing a discussion, all transitions at the abstract and concrete levels are inseparable from the mentioned forms and means. This is also true for the culture of thinking in reflexion.

The specifics of the situation in Russia is exactly the combination of massive managerial unprofessionalism with the fast evolvement of the AN and NA-forms of stereotypes, which have nothing to do with either the culture of thinking and activity or the rapid growth in cultural-mental and cultural-reflexive research and the increase in stocking models of higher forms of thinking.

These two opposites are currently struggling with each other, and related cultural issues remain unwanted, although increasingly recognized. Practical uses are unnecessarily prudent in employing cultural materials, they are afraid to «fail» and «get lost» in the net of complicated thought. However, not only anticrisis management but the need itself for a huge volume of the best and promising things in Russia – against the threat of a complete economic and sociocultural failure, degradation, and rolling backwards to the level of a third-rate country – predetermine the employ-

ment of the most powerful intellectual technologies. They have the potential of «gathering the powerful modern Russia», and the strategic form of management is a primary part in them.

If we imagine the technology of professional interaction among strategists and a group of strategists with other participants of the managerial process, then we can single out characteristics that are predetermined by the difference between the NA and AN-forms of thinking.

We emphasize the vital importance of «trajectories» of the thought content and the thinking process itself. Taking into account the above mentioned «multilevel» concept of reflexion, the trajectory of strategic thinking follows the way from situational reconstruction to fixation and development of a value system, and later on it proceeds to the fixation or construction of an A-concept of what had been fixed in the situational reconstruction. Finally, it comes to stating the problem and A-project of activity within the limits of choosing a type of a goal (stabilization, destruction, functioning, development, and a proportion between functioning and developing the whole). Strategy always refers to the fate of a whole (a system of activity, organization, region, society as a whole, etc.). In the context of a macrotrajectory each participant in a strategic team makes his or her own contribution. They should organize their co-participation in such a way that differentiation according to the content would overcome its isolation in integration and integrative movement along the trajectory.

Providing a methodological service and a certain part of the way while creating the strategic project 2000-2010 (SDC headed by G. Gref) together with our colleagues, we have found out that the integration of project results within the limits of each branch (economic, social, security, etc.) is a technological problem of strategic concern. Researchers, who aim at the content of knowledge, are not prepared to conform to the forms of organized thought. They are not ready to prove the compatibility of contents by the criteria of wholeness and homogeneity of a whole as of an object being managed. They are not ready to check the ability of a whole to change from one condition to another according to the corresponding time fixations, to test whether the change of these conditions is directed in the same way during the whole period. The technology of thinking, not the stock of experience, determines the solution of these and other questions on which the certainty and homogeneity of the project content, as well as their application, depend.

Finally, the compatibility of contents, their combined cycle and trajectory of reflexive thinking are supplemented by a huge number of transitions from one abstract level to another. In this case the ability of being transmitted is checked for the whole sum of contents or for the corrective transmission of a part.

Putting it differently, the main requirements for strategic thinking (within a team or individually) do not belong to the area of «content», but to the «form» of thinking, which is sensitive to the content of the mind.

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THEORY OF REFLEXIVITY BY GEORGE SOROS: ATTEMPT OF CRITICAL ANALYSIS

© B.Birshtein *(Canada)*, V.Borsevici *(Moldova)*

Boris Birshtein
Doctor of Economics and Philosophy,
businessman, economic adviser
in several CIS countries

Viktor Borsevici
Head of Kishinev Municipal University,
Doctor of Technical Sciences

Everybody knows the form by which I won, yet does not know the form by which I organized my victory. That's why the victory in a battle is never repeated in the same way, it corresponds to the inexhaustibility of the form itself.

Treatise "Sun Tzi", chapter "Fullness and Emptiness"
(China, 4th century BC)

1. Praeludium

The international symposium on reflexive control held in Moscow in October 2000 was an important landmark in the development of research in contiguous branches of science concerning reflexive systems and processes. It showed once again how relevant and productive the reflexive aspect is in the creative experience of analysts and practical workers in the field of natural and social sciences.

The creative discussions that took place on the very first day of the symposium in the President Hotel revealed how much had to be done to bring closer together the viewpoints and coordinate the efforts of experts from Russia, the USA, Canada, Ukraine, Moldova, and other countries in this important field of scientific research and practical experiments.

What is reflexivity? Is it the ability to take someone else's position, «to get into someone else's shoes» (one's own, to begin with), or the ability to go beyond the position of others (again, starting with one's own position)? Is it only a conscious ability – or does the subconscious also take part in reflexive processes? What is reflexive control: does it affect the whole system of values, goals and ways of thinking of the person under control? Why did it take the scholarly community 30 years to understand the importance of the reflexive approach to studying the systems that include thinking and acting participants? How do natural and social sciences interact and how should they do that? The relevance of these discussions shows the unquestionable interest of the scientific community in this problem, as well as the importance of the reflexive approach in their activities.

We believe that only by combining the efforts of scientists from different countries and different academic schools will we be able to realize and assimilate the values of the reflexive approach.

However, success is hardly possible without a critical analysis of the experience gathered by the pioneers of the reflexive approach and without following the evolution of their views and ideas, achievements and failures. This is especially true for those whose views have influenced and continue to influence the minds of their contemporaries.

2. Homo proponit sed Deus disponit

George Soros, a prominent figure in the mythology of finance markets, their tireless and formidable shaker, maintains that he had handed the control of his financial empire over to worthy followers. But the indomitable creative nature of the researcher and philosopher, Doctor *Honoris Cause* of the University of Oxford continues to realize itself in the impressive sequence of publications, by which he generously and brilliantly stimulates public interest in his extraordinary conceptions and outstanding personality.

As a result of a natural metamorphosis, the shaker of fund markets has become a shaker of the market of established ideas. Soros' publications cause constant annoyance among advocates of the orthodox economic and political theory.

This is quite understandable, since the market of scientific theories (as any other market would) stubbornly resists the attacks of distinguished practitioners, using the well-mastered strategies of scientific methodologies and polemical techniques. And the dominant actors of scientific theories market, as well as their dealers at universities, stubbornly defend themselves.

But George Soros is not a novice in this field and the methods of his argumentation are as effective as his reputation of a man of genius and financial alchemist. This has been proven first of all by the incredible com-

mercial success and popularity of his book «The Alchemy of Success. Reading the Mind of the Market».

Do we need to try once again to critically analyze his ideas? Would this be yet another example of retrograde thinking, an attempt to stall innovation in social sciences?

No, it wouldn't . But under one condition: according to the «reflexive thesis» of A. S. Pushkin we must judge the author by his own laws, explore his work from the point of his theoretical constructions and arguments, from his reflexive position. Any other approach to the work of George Soros shall be useless.

The relevance of this «reflexive approach» to the critical analysis of George Soros' foundations of reflexivity has been proven by one of his own central statements about the fundamental imperfection of people's understanding of an objective and psychological reality. The authors of this article are undoubtedly imperfect. But both the subject and object of their analysis are also imperfect in the light of this statement.

The idea underlying almost all of George Soros' conceptual constructions is brilliant in its simplicity – the psychology of participants in any historical process is its integral component and by continuously interacting with reality it forms a reflexive process: a real situation affects the minds and behavior of its participants, while their thoughts and behavior affect the development of the situation. The participants' ideas, evaluations, expectations, and prevailing preferences, which are imperfect by nature, greatly determine the natural course of events and their basic uncertainty. Because of this uncertainty the person who is the first to realize the current tendencies of a process, the evolution of psychological, material and energetic factors, who is the first to make (and withdraw) his/her investment in different movements of this process, is destined to success, while the person who is late becomes the victim of others' success, a loser and an outsider. That is the logic of History (it is by no chance that in Russian the words words *uspekh* (success) and *uspet (*to be on time) have the same root.

In the introduction to the second edition of «The Alchemy of Finance» George Soros states that in the beginning he had worked out the concept of reflexivity as an abstract philosophical idea and only after some time did he come to the conclusion that the evolution of prices on financial markets can be regarded as a reflexive historical process.

As far as this attitude towards historical processes is concerned, George Soros has a great predecessor, Niccolo Machiavelli, who stated in his immortal bestseller *The Prince* that «However so that our free will is not lost we can, it seems to me, consider it right that the fate governs half of our actions while it leaves for us to govern the other half or so». And further: «I also assert that that person is happy who adjusts his acting to the condi-

tions of his time, and that equally unhappy is the person whose actions are in discord with the time».

It is difficult to deny that for all the difference between the terminology of Renaissance writers («the fate», «the conditions of time», etc) and modern terminology («the historical process», «tendencies», etc) there is something similar in the statements of these two thinkers. In the times of Machiavelli one would invoke the power of Fate while now one would refer to the power of the objective historical process that does not depend on the will of its participants (it may be appropriate to remind Karl Marx's maxim: «The being defines the mind» and a lot of philosophical speculation on this topic).

In the minds of these thinkers the same idea seems to take different forms. According to Machiavelli, our actions are «in half» the function of fate and «the other half or so» is the result of our own choice. According to George Soros, our efforts represent the function of the environment, while our influence on it determines the historical process. He describes the reciprocal feedback between the participants' thinking and the situation or, more exactly, the interaction this feedback brings about, as «reflexivity». «The being determines the thinking, and the thinking determines the being,» that is probably his maximum synthesis.

An important comment needs to be made here: the concepts like «reflexive process», «reflexivity», as they are used by G. Soros, should not be confused with their homonyms, used by professional psychologists who study the interaction between thinking and acting subjects.

Reflexivity is defined by V. Lefebvre as follows: «Reflexivity in its traditional philosophical and psychological meaning is an ability to take a position of an «observer», «researcher» or «controller» of your own body, your actions, or your thoughts. We will broaden this understanding of reflexivity and will consider that reflexivity is also the ability to take a position of a follower to another person, his/her actions and thoughts». V. Lepsky adds, «The concept of reflexivity was broadened: reflexivity began to be understood also as modeling a system by another system with the models included (in that other system)».

It is clear that the concepts of «reflexivity» and «reflexive process» as a movement in a feed-back connection, including the cognitive and influencing functions of the subjects, participants of a historical process (subprocess) as they are treated by G. Soros are not equivalent to the concepts of «reflexivity» and «reflexive process» as seen in the scientific trend headed by V. Lefebvre and V. Lepsky.

Yet these two approaches have much in common. For example, George Soros, independently from V. Lefebvre, comes to the realization that an unlimited supremacy of natural scientific tradition in humanities hinders

social sciences by imposing onto them a worldview and methodology that are based on eliminating everything that is subjective. An acting subject is considered to be an object under study, a machine that clearly and straight-forwardly reacts to outside signals, and any deviation is regarded as the «noise of the experiment».

As early as the 1960s, Lefebvre came to a methodologically important conclusion that the tradition of natural sciences is based upon two implicit postulates:

1. A theory of an object developed by a researcher does not result from the activity of the object itself.

2. The object does not depend on the fact of the existence of a theory reflecting this object.

Furthermore, Lefebvre observes that for social sciences: «the second postulate is violated in a conflict situation. It is easy to see that the first postulate is also violated when one of the rivals imposes certain ideas about himself on another rival. After starting to study social and psychological facts, a researcher becomes just one of the characters in a game that we call reflexive. Since he cannot exclude the possibility of contact with the characters under study, his theoretical constructions, being assimilated by these characters, can greatly change the functioning of the whole system. On the other hand, the researcher can be taken prisoner by an object: his conception will be imposed on him by the object».

Soros follows a similar path. First, he levels stinging criticism at the natural science paradigm and its most illustrative example – Karl Popper's deductive nomological (D-N) model. The Achilles' heel of this model is its requirement that the meaning of statements be isolated from the statements made in their respect. Moreover, original and final conditions have to consist of facts that can be observed, while generalizations must have a universal character.

This is where Hector delivers a crushing blow. Soros shows that these conditions do not exist in situations involving thinking participants. This in turn allows him to draw an extremely important conclusion: a less than perfect understanding of a situation by its participants is incompatible with the D-N model and, consequently, the scientific method in its «pure» natural science form fails when it involves thinking subjects.

The natural science approach is effective when thinking is clearly differentiated from the objects it is directed at. When thinking subjects with their imperfect understanding of a situation become participants in the events, the natural science method is doomed.

Soros takes pleasure in mentioning various forms of mimicry used by such teachings as Freudianism and Marxism. But he saves his most scolding words for the theory of perfect competition used by the advocates of

the laissez-faire capitalism. A brilliant passage is dedicated to analyzing the tricks employed by supporters of this theory to create a pretense of an axiomatic system. It is not only an analysis of economic models but also an analysis of strategies, i.e. various methodological tricks and devices (sometimes conscious and sometimes unconscious) that are used by some scholars to defend their position. An experienced market player, Soros skillfully uncovers the methods of defending the overvalued shares in the market of scientific theories. He clearly and reflexively thinks about their positions and the path their minds follow.

 The statement that the goal of economics is not to study the categories of demand and supply as they are is exposed by Soros as a skillful misleading trick. The proponents of the laissez-faire approach claim that the study of demand is the task of psychologists, and the study of supply is the task of expert managers. Soros shows, however, that the existence of demand and supply categories is an implicit form of their independence from market events! His reflexive intuition and logic are impeccably exact. More than that, they are artistic since they meet the requirements of the aesthetics of his inner thinking and do this spectacularly, beautifully, and impressively.

Soros completes his attack on the fortress of the natural science approach in the form of Popper's D-N model by demolishing the theoretical constructs created by his opponents and by switching over to the development of his own theory. It is interesting that the name of Karl Popper is present in the biographies of both Soros and Lefebvre. Soros started with the D-N model to destroy the foundations of speculative theoretical constructions in social, economic and psychological studies, while Lefebvre has had a strong impact on the evolution of Popper's own views. The latter even wrote an introduction to one of Lefebvre's books praising his research.

But let us return to the evolution of the theoretical constructs. Having determined that natural-scientific approach to social and economic sciences has no future, Soros decided to follow a different path: relying on his rich experience as an alchemist in the stock and financial markets, George Soros becomes an alchemist in the market of theoretical products.

Having noticed that the attempts to impose the methodology of natural sciences on social ones are reminiscent of the work of medieval alchemists, he nevertheless notes that false theories may as well turn out to be productive in the sphere of the humanities. At any rate, the term «social sciences» itself becomes suspicious and, he believes, the magic word «science» is often used by «social alchemists» as a time-tested means to impose their will on other people and to sell them their theoretical product.

He believes that one should study the phenomena of reality by all possible means. And where the strict methodologies of the natural science fail, the social science in the form of alchemy may turn out to be successful. But

the power of the natural-scientific tradition learned at school and at the universities is almost irresistible. And George Soros gives in to the fatal temptation – he develops his concept of reflexivity, presenting his theoretical proof in the language of mathematical functions, that is remaining within the limits of the same natural science method.

Here are the two recursive functions given in «The Alchemy of Finance»:

$$y = f(x) \qquad \text{(cognitive function)}, \qquad (1)$$
$$x = \varphi(y) \qquad \text{(participating function)}. \qquad (2)$$

The author describes the first function, which depends on a situation (variable x), as cognitive, and the second one, which shows the dependence of a situation on thinking, as participating.

By substituting (2) for (1) and (1) for (2) and rewriting the functions as

$$y = f[\varphi(y)], \qquad (3)$$
$$x = \varphi[f(x)], \qquad (4)$$

Soros solemnly proclaims that this is the theoretical proof of his approach. And right away, without any analysis of the system's characteristics, just on the basis of this pair of formulas, he makes a number of surprising conclusions:

1) The two recursive functions do not result in equilibrium but rather in a never-ending process of change;

2) This process is radically different from the processes studied by natural sciences;

3) The concept of reflexivity presupposes a new theory of the historical process, etc.

Complying with Pushkin's appeal, we have to judge an author by his own rules. But the goal of our research was not to look for errors in Soros' work. We had to do a great deal of calculating and analyzing in order to find out what follows and what does not follow from the theoretical proof of his approach. Since the author makes this proof too quickly, without indicating any additional characteristics of the system and without giving any concrete examples of functions (1) - (2), we have to do the work for him.

The authors were rewarded by obtaining at least three results. First, they improved their understanding of the nature of reflexive processes (as seen by both Soros and Lefebvre); second, they got a powerful stimulus for further research; third, they became ardent supporters of Soros' fundamental statement that it is the imperfect understanding of any historical process by its participants (including the process of scientific research) that is the main agent of change.

Let us start with stating that expressions (3) and (4) are incorrect, since they represent not a composition of φ and f functions but rather a system

of equations, the solutions of which (if they exist) give a set of all immovable points of different compositions of φ and f functions, that is reflections (again functions) of the kind

$$\varphi \circ f : X \to X, \tag{5}$$
$$f \circ \varphi : Y \to Y. \tag{6}$$

It is not difficult to show that if the intersection of φ and f function graphs is not empty, i.e. if

$$\Gamma_f \cap \Gamma_\varphi \neq \varnothing, \tag{7}$$

where

$$\Gamma_f = \{ (x, y) : y = f(x) \} - \text{the graph of } f \text{ function,} \tag{8}$$
$$\Gamma_\varphi = \{ (x, y) : \varphi (y) \} - \text{the graph of } \varphi \text{ function,} \tag{9}$$

That is the set of immovable points of compositions $f \circ \varphi$ and $\varphi \circ f$ is not empty. What does this mean? It means the following: the reflexive process formed in fact by a pair of recurrent dependencies of the type

$$y_{t+1} = f(x_t) \tag{10}$$
$$x_{t+2} = \varphi (y_{t+1}), \tag{11}$$

under a condition (7) will have a remarkable characteristic. If we take as x_t one of the immovable points of $\varphi \circ f$ then we will get the following consequence:

$$y_{t+1} = f(x_t) \tag{12}$$
$$x_{t+2} = \varphi (y_{t+1}) = \varphi (f(x_t)) = x_t,$$
$$y_{t+3} = f(x_{t+2}) = f(\varphi (y_{t+1})) = f(x_t) = y_{t+1},$$
$$x_{t+4} = \varphi (f(x_{t+2})) = \varphi (f(x_t)) = x_t,$$
$$....$$
$$x_{t+k} = x_t,$$
$$y_{t+k+1} = f(x_t) = y_{t+1,}$$

where k is any even natural number. This means that in this case the reflexive process is stabilized on two meanings: x_t and $y_{t+1} = f(x_t)$ which are immovable points of the reflections of $f \circ \varphi$ and $\varphi \circ f$ (let's mention that a similar situation will occur if we take any immovable point from y as a starting point).

So if condition (7) is satisfied, there is a possibility of achieving an «equilibrium», which means that the first point of George Soros' conclusion is false since the «never-ending process of changes» is not always possible.

Moreover, in the case if φ and f functions graphs coincide, i.e. in the case of

$$\Gamma_f = \Gamma_\varphi \tag{13}$$

the choice of any initial point for starting a reflexive process will *inevitably* cause a «blocked» reflexive process. However, all these cases are from the

field of pure mathematics. So one may inquire whether there are any real-life situations where this can happen.

This happens when the situation in which a group of people takes part is stable, and every participant understands this. The situation suits every-one, and no additional efforts are taken to change it.

It appears, however, that this contradiction did not escape the remark-able intuition of George Soros. That is why (according to our «reflexive» reconstruction of his thoughts and actions) in the introduction to the sec-ond edition of «The Alchemy of Finance», he admits that his way of think-ing has changed considerably. Now he believes that in most cases, condi-tions are close to the equilibrium and under the conditions like these one can neglect the mechanism of reciprocal feedback. It is quite different, though, if discrepancies between the participants' perceptions and reality are significant. In this case the reflexive mechanisms of reciprocal feed-back start working.

Again we cannot agree with that. From his mathematical model it fol-lows that any pair of immovable points x^* and y^* connected by the functions

$$y^* = f(x^*),$$
$$x^* = \varphi(y^*),$$

any discrepancy $\rho(x^*, y^*)$ in the metric system can occur. However, no re-strictions on the structure of this metric system and the value of the dis-crepancy are indicated in George Soros' model.

Here is a suitable real-life example of this situation. In some region of the former Soviet Union people live very badly, they understand it, and the discrepancy between their perception of the situation and the situation it-self is significant. They are «at the bottom» but the stereotypes of their think-ing processes, their apathy and distrust of their own capabilities are such that they make no efforts to change the situation. This is stagnation. Some-thing similar has happened before, and people believe that it is their bad fortune. Moreover, some of them think (and they are right in some respect) that in the past they had a much better life. They wanted a change but when the change arrived it was not what they had expected. And now they do not want anything, although they feel that it is not possible to carry on living like that. This is a case when no Western theories hold, but the model of George Soros with its points of «freezing», points of special stagnation – however strange it may seem – does work! So why did he miss these points? Simply because he was not able to see them. His experience of living in a different, dynamic society blocked even his remarkable intuition. This shows how powerful a tradition and specific psychological environment can be. These are not dynamic stock and exchange markets but rather slowly evolv-ing tectonic processes. It is the lengthy experience of the ex-Soviet citizens

in a stagnating atmosphere of the planned economy that paralyzes their will and their ability to make changes.

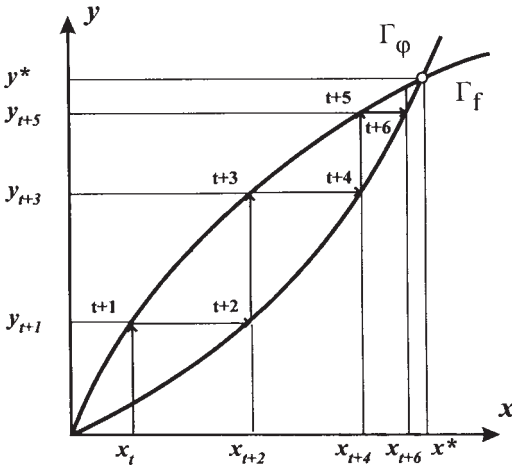The mathematical model of reflexion, sketched but never fully developed by Soros, turns out to be not nearly as superficial as it may seem to some 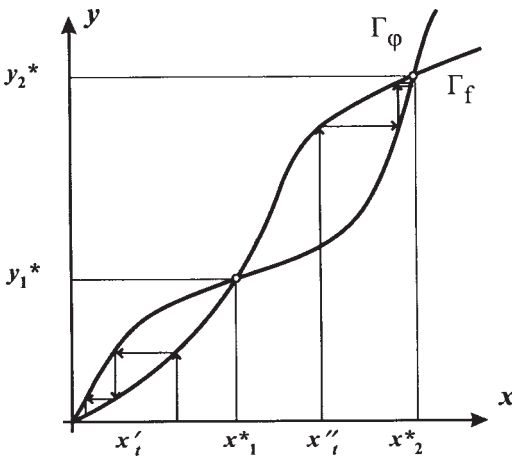traditional scientists. But we have no choice but to refute his second thesis that the reflexive processes described by the model (1)–(2) are radically different from the processes studied by natural sciences. It is exactly these kinds of models that are used in the analysis of electronic autogenerators, cell phones, etc. And here it would be appropriate to use the experience of contiguous natural sciences.

For simplicity's sake, let us assume that variables x and y are real numbers and that $x \geq 0, y \geq 0$.

If at the axis x we make x our starting point, then the graphs of f and φ functions show how a reflexive process will start, set by recurrent relations of the kind (10)-(11). The trajectory of this process in Fig. 1 is marked by the points x_t, $t + 1, t + 2, t + 3, \ldots$ and transitions between them, forming the so-called *Lamerey staircase*, which at first by speeding up and then by slowing down comes to the equilibrium point, given by a pair of two immovable points (x^*, y^*).

Fig. 1

Fig. 2

This shows that even within the limits of a primitive model like this one it is possible to represent reflexive processes, which are characterized by

initial growth and then by the stabilization of the situation near some point of equilibrium. This is exactly what was neglected by George Soros – reflexivity in his sense can cause not only a continuous change but, at some point, a stable environment.
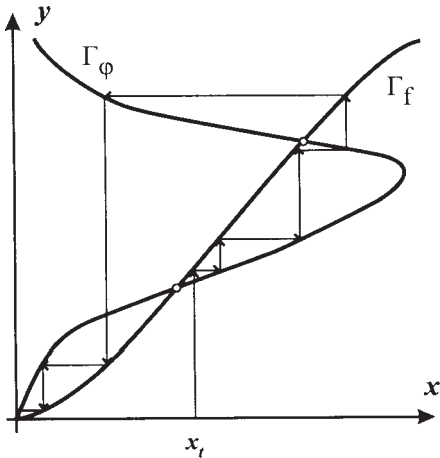

Fig. 3

The model in Fig. 2 shows even more interesting reflexive processes. The mutual position of graphs Γ_f and Γ_φ is such that if the reflexive process starts from any point between the immovable points x_1^* and x_2^*, then it will grow and get stable near the point (x_2^*, y_2^*) (we have seen this type of evolution in the previous example). And what will happen if the reflexive process starts from a point that lies between 0 and x_1^*? As we can see from Fig. 2 the reflexive process will begin to develop in the opposite direction! This means that the pair of immovable points x_1^*, y_1^* is critical – to the right of it, the reflexive process is characterized by growth and followed by stabilization, while on the left it slumps to almost zero.

In the life of economic systems evolutions of this kind are common. If the potential for development is below a certain level, then the system eventually disintegrates, otherwise it will reach a certain level of stability and prosperity.

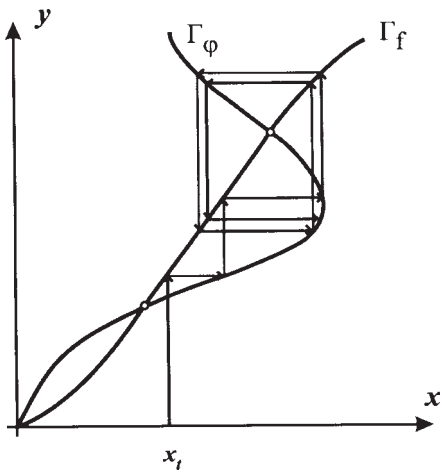In Fig. 3 we can see a reflexive system of the «tragic» type.

Fig. 4

It starts with sweeping growth, then the reflexive process suddenly «drops» after reaching its extreme value as a result of a structural catastrophe and then slowly dies under its own ruins. This is exactly the type of processes that are a special subject of George Soros' research – a failure in stock and

exchange markets: strengthening followed by abrupt self-suffocation and failure. But someone's tragedy turns out to be someone else's tremendous success. If at the beginning of this process one enters the game with a max-imum investment and then leaves it just before it peaks, one can make a fortune (as George Soros managed to do several times).

The main issue is this «if» – if one can catch «reflexively» when this moment comes. Figuratively speaking, it is reflexivity according to both Soros and Lefebvre.

In Fig. 4 we can see another type of a reflexive system – the relationship between the «cognitive» (Γ_f) and «participating» (Γ_φ) functions is such that it does not come to the failure, but the reflexive process quasi-accidentally hurtles around the point of immovability: the situation is either approach-ing its end or suddenly changing for the better. Reflexive systems and pro-cesses of this kind are a paradise for lucky gamblers at financial markets, a headache for managers of national economies and a puzzle for scientists in the field of economics.

3. Summa summarum

The potential of the model (1) – (2) and its extensions is enormous. As variable functions $f: X \to Y$ and $\varphi: Y \to X$ not only numbers but also sets of other characteristics as vector sets, non-numeric spaces, etc. can be used. One can introduce the dependence of functional reflections from some slowly or quickly changing parameters, including random variables – all this will inevitably contribute to the modeling of reflexive systems and pro-cesses.

The model of George Soros turned out to be much more inclusive and tricky than its author thought – since its subject is the thinking and behav-ior of people who act under conditions of the constant lack of resources for existence and development. *Faciant meliora potentes.*

The main question here is which model to follow and which way to go in each specific case? What should the cognitive and participating func-tions actually look like? On what principles must they be based and how should they be built? How well will they fit into the actual systems and pro-cesses? Even more questions will appear if we take into consideration that participants and groups of participants – thinking and acting subjects – are capable not only of realizing such reflexive systems, but also of realizing the reflexive processes themselves and the reflexive management in the light of the approaches of V. Lefebvre, V. Lepsky and their colleagues.

4. Post scriptum

The journal «Economic Review» (02/02/2001, **4**, Kishinev) published an article by George Soros «The Bankruptcy of the Internet», in which the author analyzes the failure of the Internet-boom in the light of his reflexive theory. The article contains the sad acknowledgement of the fact that economists are still neglecting his arguments, remaining captivated by the concept of multiple equilibrium.

But the picture of financial markets in the light of the reflexive theory has turned out to be much closer to the harsh realities of life than any economic theory that ignores the phenomenon of reflexivity.

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PSYCHOLOGICAL ADJUSTMENT TO ECONOMIC AND SOCIAL CHANGES

© Stuart A. Umpleby *(USA)*, Tatyana A. Medvedeva *(Russia)*

Stuart A. Umpleby
Department of Management Science
The George Washington University
Washington, USA,
professor

Tatyana A. Medvedeva
Department of Economics,
Siberian State University of Transport,
Novosibirsk, Russia,
associate professor

Abstract

In 1982 Vladimir Lefebvre described two systems of ethical cognition and suggested that one characterized the USA whereas the other characterized the former Soviet Union. Since glasnost, perestroika, the break-up of the Soviet Union, and the election of two Russian presidents, has the ethical system in Russia changed? Specifically, has there been movement from the second toward the first ethical system? Although Lefebvre suggests that a person learns one of the two ethical systems at an early age and that little change thereafter is possible, Lawrence Kohlberg claimed that moral development is not only possible but universal, although some people progress farther than others. This paper describes the ethical changes taking place in Russia from two perspectives. First, we describe the feelings among the Russian people that are associated with the current economic and social changes, as examples of «moral suffering.» And we explain the logic Americans use as an alternative to feeling moral suffering in similar circumstances. Second, we describe change from the second to the first ethical system as it appears from the perspective of Kohlberg's theory of stages of moral reasoning. We suggest that Russian culture can be thought of as a combination of Kohlberg's first and fifth patterns of moral reasoning. The missing intermediate stages — two, three and four — can be learned by participat-

ing in the institutions of civil society. If Russian culture changes by moving from the second to the first ethical system, Kohlberg's theory may serve as a guide to how to make this transition.

Introduction

In the past two decades the work of Vladimir Lefebvre has attracted considerable interest among academics and policy makers both in Russia and in Western countries (*Lefebvre, 1992, 1997; Wheeler, 1990*). Lefebvre's work is a major contribution to comparative psychology and has important implications for those engaged in negotiations involving people from East and West, whether for purposes of diplomacy or business. For those interested in the economic and social changes now occurring in Russia, a key question is whether Lefebvre's second ethical system describes the political ideology of the Soviet Union or the culture of the Russian people (*Lefebvre, 1982*). If the second ethical system is a description of the ideology of the Soviet Union, then the transition to Western style democracy and a market economy can occur rather quickly. But if the second ethical system is a description of Russian culture, established over hundreds of years, then the transition to a Western style political and economic system is likely to take much longer. Indeed the next relatively stable social system in Russia may be quite different from the Western European model.

Lefebvre's theory may make an important contribution to the discussion of the ethical foundations of economic systems. Previously, capitalism was associated with greed, the pursuit of self-interest, and exploitation of others. Communism was associated with concern for others, sharing, and devotion to the community. This description of the ethical foundations of the two economic systems makes communism look far more appealing than capitalism.

Alternatively, Lefebvre associates the US, and hence capitalism, with his first ethical system and the Soviet Union, and hence communism, with his second ethical system. The first ethical system is concerned with means or process – obeying the law, fair procedures, etc. The second ethical system is concerned with ends or outcomes – equality, basic services, etc. According to the second ethical system, going around the law or avoiding the law is justified if the goal is good. According to the first ethical system, working within the law (and changing the law when necessary) is more important than a specific outcome. This way of describing the Western social system (as emphasizing process over outcome) may be more acceptable to the Russian people than a description of capitalism as based on pursuit of self-interest. If so, then it may facilitate the cultural transition to a more Western type of society.

Moral Suffering in Russia due to Economic and Social Change

An important contribution of Lefebvre's theory is that it suggests that there are fundamental differences in how people think about and emotionally perceive heroism, moral virtue or sainthood, and moral suffering. Currently the Russian people are experiencing considerable moral suffering because the political and economic reforms of recent years have been interpreted by many people as a movement toward a less moral social order. For seventy years people in the Soviet Union were told that communism was good and capitalism was bad. Rejection of communism in favor of capitalism could therefore easily be seen as a set backward.

How does Lefebvre describe moral suffering? He suggests that the first ethical system is closer to the cultures of the USA, Western Europe, and the other developed, trading countries. Most of these countries share an orientation toward individualistic values, technological progress, market relations, and belief in democracy and law. Russian culture, with its orientation toward abstract spirituality, collectivism, and belief in conscience, is different from the ethical system currently dominant in most modern societies.

This crucial difference in the ethical systems of Russia and the West is one of the most important problems making the process of psychological adjustment of the Russian people so difficult. The current situation in Russia is characterized by high social and cultural stress. Here are some examples:

1) Approximately two years ago a column, «The Formula for Success,» in the newspaper *Argumenty i facty* described a successful Russian businessman, Vladimir Dovgan. Dovgan, who was always very self-confident and optimistic, said that he is disappointed by the development of modern civilization. He noted that material progress has not increased the happiness of humankind. The columnist asked about the reason for his pessimistic views. Dovgan replied that he remains an optimist, as he was earlier, but he thinks that modern civilization looks like an error in the development of humankind. «Progress is measured by the things people have, by the food people eat, by the clothes people wear, by the houses people live in, etc. I have nothing against material things, but limited natural resources force us to think how much is justified... False values are affirmed, money is deified. Blind instincts such as envy, greed, and fear lead people.» In this way, a young, successful businessman at the end of the twentieth century discovered the limits of a consumer society and came to affirm Orthodox Russian values.

2) A similar problem was described in an article in the newspaper *Komsomol'skaya pravda*. The author wrote about a young, successful Russian businessman who earned a lot of money and was disappointed in such a

style of life. To solve the philosophical problems torturing him, he created the Research Institute of Time.

3) It has been said that the behavior of the so called «new Russians,» amazing by their uncivilized manner of spending easily received money, is also an example of an attempt to fill a soul that was empty as a result of breaking habitual patterns of behavior. Culture is an aid to the psychological survival of people as thinking, reflecting beings and forms the foundation of their psychological stability.

4) An article titled, «The Business of Doctor», appeared in the newspaper *Argumenty i facty*, April, 26, 2000. It described a doctor, Igor Yemelyantsev, from Komsomolsk-na-Amure who took payments from patients and spent the money on bonuses for workers starving without wages. Dr. Yemelyantsev was condemned to 7 years of loss of freedom. The newspaper noted that the policemen and judges involved felt shame about this case. Discussing this article, a doctor, Alexander Zolotov, from Spassk-Dal'nii pointed out the view of Minzdrav (the main organization managing the Russian public health service) about paid service in medical institutions. He writes: «There is nothing in this document about the most important point: what payment a provider of service will receive.» He describes an example from the work of his hospital: consultation with a patient by the doctor costs 50 rubles (less than $2); the doctor as the main provider of this service receives 4 rubles (15 cents). A bandage for a patient on a weekend costs 22 rubles (less than 1$). The nurse who makes this bandage receives nothing.

The strongest feature of Russian culture and the Russian mentality is compassion and charity. The example of Dr. Yemelyantsev shows that the Russian people are able to accept economic and social changes and to preserve the best features of the Russian mentality. However, compassionate actions by individuals are not sufficient to create a   modern, productive society. A market economy and effective government based on just laws is needed.

There has been a radical breaking up of the stereotypes which had been developed and had been taught for many years — ideas about what is good and what is evil. The boundary between what is legal and illegal, between what is proper and improper, has been erased. To comprehend the current social and economic changes, people have had to recreate themselves to fit the new conditions. «Self-determination is a key moment of freedom.» People are struggling to learn new ways to be free (*Tillich, 1952*).

The high level of uncertainty and rapid social, political, and economic change have led to stress and illness and a rise in mortality (*Stone, 2000*). Research on the influence of social factors on a person's psychology suggests that uncertainty has the largest negative effect on the psychological health of people.

B.S. Chorev, professor of demography at Moscow State University, was interviewed for an article in *Komsomolskaya Pravda* on 21 November 2000. He noted that the decrease of population in Russia from 1992 has been 5.8 million people. He explained that depopulation is excess mortality over the birth rate. It has been the norm for Russia in recent years. In 1998 mortality exceeded the birth rate by 1.8 percent, and there are districts where mortality exceeded the birth rate by 2, 3, or 4 percent. Prof. Chorev noted that the most important reason for this decline in population is the transition from socialism to capitalism. The highest mortality happened in 1994-1995. This was the consequence of the transition to capitalism. The average duration of life then increased a little. But in 1999 there was another peak of mortality. Prof. Chorev compares the demographic situation with the syndrome of a concentration camp. In the case of a concentration camp when people are faced with catastrophic circumstances for the first time, the result is death and suicide. After some time people adapt to the new conditions, apathy increases and mortality decreases. What do we have now in Russia: improvement of the situation or the syndrome of a concentration camp?

Compared with earlier times, Prof. Chorev says, the reasons for mortality have changed. Earlier, mortality was increasing due to a growing number of older people. Now the reasons are illnesses, murders, and suicides. Prof. Chorev mentions the figure of 75 thousand suicides in 1994-1995. This is an extremely high number. In 1998 there were 40 thousand suicides. Old married couples hang themselves together. Teenagers jump out of high windows.

Prof. Chorev emphasizes that the high rate of mortality is made worse by a low birth rate. This combination is killing the Russian nation, the professor says. So this summer B.S. Chorev and his colleagues created a League for Struggle with Depopulation of the Russian Nation.

Stages in Adjusting to Cultural Change

We suggest that the following scheme of stages of psychological adjustment to a new culture can be used for analyzing of the Russian situation:

Stage 1 - initial euphoria/ excitement
Stage 2 - irritation/ hostility
Stage 3 - gradual adjustment
Stage 4 - adaptation and biculturalism.

The first stage of psychological adjustment of Russian society to the recent social and economic changes occurred from the beginning of «perestroika» in 1985 to 1992. This period of transformation was characterized by very hopeful expectations. The Russian people wanted to feel united with the world, so they focused on similarities between Russia and Europe,

and between Russia and the USA. They wanted to show other people that Russians want to be free, want to have peace for themselves and for the world, want a wonderful future for their children. Russians gathered every evening in order to watch TV programs where M.S. Gorbachev was speaking. His democratic manner of communication and the content of his speeches were new. His speeches aroused sympathy and gave hope. Government meetings were watched with more interest than the most fashionable and popular movie. Many people tested themselves as businessmen. The possibility to test oneself in new activities can be intoxicating. The variants of privatization were discussed and people hoped that they would find their own share of the national property. People were standing in line at night in order to put a stamp in their passports and take a privatization check symbolizing that they were owners.

In the second stage, after the period of great expectations, there came a time of disappointment which lasted longer than the time of euphoria. In Russia this period was from about 1992 (the year of price liberalization) to 1996, a time of uncertainty, deception, and cynicism. The time came when people began to joke sadly, mimiking the recent words of the President: «We shall not have 'shock' therapy as it was in Poland. We shall have something much worse.» The recent privatizations were called by people «prihvatizatsiya.» It is a play on words: «prihvatit'» is a popular expression meaning «to steal.» Everything in the country was stolen and people were showing their pain by using this word. People came to believe that it is impossible to survive if one works honestly. People who were continuing to live by moral laws came to be seen as weak people, and society did not respect them any more.

People began to be afraid of each other. Iron bars appeared on the first floor windows of apartment houses. Previously such bars on windows were associated only with prisons and houses for crazy people. People were spending their last money to purchase a second door made of steel. When apartments were robbed, everything was taken, including food. Murders, terrible because of their cruelty and senselessness, came to be a common occurrence. Televised government meetings began to be interpreted by people as performances in a circus, but it was not fun. It was very sad to watch them, because people understood that new laws brought very little change in society. Those people who were in power during the Soviet time and were called «communists» are in power today and are called «democrats» or «liberals.»

In the third stage, from 1996 to the present, the Russian economy is a contradictory system which consists of elements of a free market with government regulation, powerful monopolies, and remainders of centralized management. The state of the Russian economy is intermediate in charac-

ter. And the current ethical system of Russian society is similarly uncertain. The way society has reacted to such strong shocks is seen by some people as moral disorientation and by others as moral degeneration. There has not been sufficient time for individuals and institutions to adapt by building new myths, traditions, and procedures. The problem of psychological adjustment is increased because reforms have the appearance of modernization or are justified as being necessary for «progress». But are the changes steps forward or backward? In Russia the transition to a market economy is associated with moral suffering.

Why People in the West do not feel Moral Suffering

The Soviet Union was based on the theories of Karl Marx. Marx assumed that societies passed through several stages of development – primeval, slavery, feudalism, capitalism, socialism, and communism. Since the New Independent States are now trying to go from socialism or communism to capitalism, it is not surprising that people would imagine that they are going backward in the development process.

In the West people have not been using Marx's stage theory of development. They believe that the world is going through a multi-faceted process of political, economic, social and psychological development. Although the process of development varies from country to country, they believe that most indicators are improving. There have been fewer wars in the last half of the 20th century than the first half. Most people are eating better. Our ability to treat diseases has improved, although access to health care varies greatly. People are better educated. Trade has increased dramatically due to improvements in communication and transportation. Access to information and entertainment has improved greatly. The greatest doubts concern environmental pollution, long-term sustainability, and equality of opportunity. But a civilization based on capitalism and democracy is flexible and adaptable. People in the West have learned to rationalize behavior that may seem unethical elsewhere.

In the US businessmen and entrepreneurs have no moral doubts about engaging in business. They feel that if they provide a quality product or service at a price that people are willing to pay, they are making a positive contribution to society. If they charge too much, a competitor will offer a similar product or service at a lower price and take away their business. Hence, the market insures that profits are not excessive. Those people who do become very wealthy usually become philanthropists after they realize they have no use for a very large amount of money. In the West if conscience and the law conflict, people work to change the law. For example, in the U.S. there have been a long series of legal reforms regarding civil rights. Also, corporate lawyers work to insure that their corporation is complying with

the law, and lobbyists work to influence the law. The assumption is that people can and should operate within the law and that changing the law is a way to improve society.

A Western View of the Transition

What does the transition look like when viewed from a Western theory of ethical cognition? A leading example of such a Western theory is Lawrence Kohlberg's theory of moral reasoning. In terms of Kohlberg's theory the transition looks like movement from the lower stages of moral reasoning to the higher stages of moral reasoning. Lefebvre's second ethical system could be seen as similar to Kohlberg's first stage of moral reasoning. Kohlberg's first stage of moral reasoning is characterized primarily by fear of punishment. One must do what an authority figure says to do or be punished. The second stage refers to barter relationships — agreeing to exchanges of goods or services perceived to be of equal value. The third stage, responding to peer pressure, could be regarded as a transition stage. People can adopt the values of their peers in either the second or the first ethical system.

Lefebvre's first ethical system can be interpreted as being similar to Kohlberg's fourth and fifth stages of moral reasoning. In these stages there is an emphasis on process rather than outcome. The fourth stage describes a «law and order morality». People obey the laws because they believe that if they do, society will operate better for everyone. The fifth stage introduces individual conscience and allows the individual to violate the laws of the state if he or she feels that they are not consistent with the «laws of God». However, the laws of the state must be broken openly and publicly in an effort to persuade others that the current laws are unjust and should be changed. This assumes, of course, that open discussion of problems is widely practiced in society on every level and that public discussion of social problems will eventually lead to appropriate political changes.

But associating Russian culture only with the first stage in Kohlberg's theory fails to capture the strong element of compassion.

Comparing Moral Suffering with Moral Development

Individual adjustment to the recent reforms in Russian society is complicated because Russian culture confronts two main challenges. On the one hand, the best of Russian culture proposes the ideals of the spiritual development of individuals and advocates social arrangements which could be regarded as similar to the fifth stage of moral reasoning in Kohlberg's theory. But on the other hand, there is often an absence of elementary politeness and consideration shown to other people (Kohlberg's second to fourth stages of moral reasoning). So, one interpretation is that adequate

institutional mechanisms for realizing Russian social ideals have not yet been developed. This situation is usually described by saying that the NIS needs to develop the institutions of civil society. One feature of stage theories is the assumption that stages cannot be skipped. People must move gradually in sequence from one stage to the next, each time increasing the complexity of the way they reason about moral issues. Experience in working with the institutions of civil society helps people to move up the stages of moral reasoning and tends to fill the gap between the first and fifth states of reasoning.

Reflexion occurs not only within individuals but within societies as well. Discussing ethical issues promotes change in ethical systems by means of moral development in both individuals and societies. Assuming there is the possibility of moral development in both individuals and societies, the task is to promote and to facilitate that development.

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The editor-in-chief's commentary

The essence of Lawrence Kohlberg's notions is in his likening moral development to intellectual development that follows Piaget's stages. The essence of Vladimir Lefebvre's notions of two ethical systems is in his presumption that there are two different types of connection between a person's actions and moral reasoning prompted by these actions. The type of connection does not depend on the level of intellectual development. Trotsky was a no less sophisticated intellectual than Korolenko, though he «belonged» to the second ethical system, while Korolenko "belonged" to the first. Therefore, the authors are wrong when they are trying to interpret the second ethical system in Russia as the result of the insufficient intellectual and moral development of Russians. However, the authors seem to feel this, saying: «... associating Russian culture only with the first stage in Kohlberg's theory fails to capture the strong element of compassion».

EDUCATION AND CULTURE

PHILOSOPHY OF HUMANIZATION OF EDUCATION AND REFLEXIVENESS OF DIALOG

© I.N.Semyonov *(Russia)*

Director of the Institute of Reflexive Psychology of Creativity and Humanization of Education.
Professor at the Russian Civil Service Academy at the Office of the President of the Russian Federation.
Doctor of Psychology

One of the ways to develop a cultural dialogue is to analyze its problems from the viewpoint of the modern philosophy of the humanization of education and its psychological and pedagogical means. This philosophy is a new trend in scientific and theoretical reflexion and grounds for the innovative practice of education.

The philosophy of education humanization is similar to the philosophy of science, technology, art, and management. The differences are in its subject matter: axiological, methodological, ontological, ethical and praxiological problems of educational theory and practice.

From the viewpoint of the philosophy of education humanization [1, 5], reflexive psychology and pedagogy [12-18], which we are developing , the following stages can be singled out in the formation of dialogue and reflexion in European culture.

At the *first – ancient Greek –* stage, the reflexive development was substituted by the dialogue invented by Socrates to institute multilateral discussions with his disciples for the specific purpose of defining philosophical concepts. Socrates initialized the dialogue and, as the leader of the discussion, attracted participants manifesting various views and positions related to its topic. In this case the dialogue took the so-called «star» form, which in stricter terms should be called a polylogue. Reflexion here was carried out both in its intellectual form, as an explication of the principles defining a concept or problem under discussion, and in its interpersonal form, as mutual understanding among the participants of a polylogue. Later, in

the works of Aristotle, Plato, and other philosophers, the Socratic dialogue transformed into various forms of ancient dialectics (V.F.Asmus, A.F.Losev, etc.) as a means of connecting and correlating abstract concepts and categories. Here reflexion turns into rationalization and changes from the ethical and gnosiological means of ontologization (Plato) into the logical and methodological one (Aristotle).

At the *second – ancient Roman* – stage, the dialogue becomes polarized and reflexive in the «Comparative Biographies» by Plutarch. At first, Plutarch contrasts a positive biography with a negative one in order to compare and evaluate their consequences. Thus, the dialogue acquires a time vector for its reflexive development and becomes organized in stages (2000 years later this was explained by Hegel in Christianizing the dialectics by using the formula «thesis-antithesis-synthesis»).

At the *third – early Christian* – stage the dialogue gets an antinomic form of the ontologization of the bipolar existence (the City of God – the City of Earth, the celestial world – the material world, the ethics of good and evil, piety and sin, etc.). The tension and struggle of these bipolar powers in the mind of a religious person are demonstrated, for instance, in the «Confessions» of St. Augustine. Although the dialogue here is carried out in the inner world of a repenting and confessing mind, its antagonistic, fighting contents are influenced by reflexion, within the limits of the monistericly organized Christian worldview. Moreover, the dialogue became hierarchical (as compared to the parity in the ancient times), since from the religious point of view a human being as a part (created by God) led a dialogue with a whole implemented in the idea of the absolute demiurge.

At the *fourth* – medieval – stage the dialogue moves from the inner world, i.e. the mind of a religious person, into the outer world – the structured dispute between a discussant and his opponent.

The most illustrative example of a discursive dialogue of this kind is the argument that went on for years between B.Klevrovsky and P.Abelard (described in his «History of My Sorrows»). Here reflexion transforms into the formal logical argumentation of statements discussed in disputes of many days.

At the *fifth – Renaissance* – stage, the dialogue became once again a free (partially from the Church canons as well) discussion of various, but not necessarily polar, views of the subject. Dante's «The Divine Comedy» serves as a socio-cultural prototype of this multilayer dialogue. Here reflexion is presented in the form of a «mental journey» through different spheres of being that is intrepreted from the position of a human who is reviving to life. This human is aware of his creative potential owing to his special position in the world as God's creation similar to Him due to the freedom of will in the very acts of creation. The Renaissance gave birth to a plentitude of various

forms of dialogue – from individual consciousness engaged in an inner dialogue (Shakespeare's «Hamlet» and sonnets) through the polylogue of life roles, social positions (as in Shakespeare's comedies and tragedies) to the paradigmatically rationalized dialogues of scientists and philosophers (most vividly illustrated by the followers of Italian Neoplatonism and Galileo).

At the *sixth – rational –* stage in the times of the New Age, the dialogue becomes polarized once again (for example, R. Descartes draws a distinction between thinking and extent and between soul and body) and obtains a new categorical and antinomic character (Kant). Here reflexion is presented in the form of *a priori* projection of the abstract categories of dialogue (Kant's table of categories). However Kant's reflexion is implied as the basis of learning. The necessary conditions for explicating reflexion as a special method of learning were developed by Fichte (in his work «The Facts of Consciousness») and singled out in the procedure of thinking by Hegel as means to provide the dialectical solution of synthesis and interaction between a thesis and an antithesis.

At the *seventh – irrational –* stage, in the 19th century, the dialogue gets reduced once again to the inner argument of a person with himself (in the works of S. Kierkegard). Here reflexion gets the existential form of a person conceiving his being in boundary situations. Later the existential reflexion passes from the questions of morality (Dostoevsky) to the dialogue ontologization of interaction between the conscious and the unconscious, the rational and the irrational in human psychology (in the works of E. von Hartman). In Freud's early work, it takes the form of a dialogue between unconscious sexual desires and the censuring and rationalizing mind. Later Freud (almost unconsciously referring to Hegel's three-part dialogue) introduces the third component of the complicated dialogue in the form of «collective unconsciousness». Later on, Jung transformed it into a dialogue between a person's mind and his cultural «archetypes». Here reflexion again gets explicated through the openness of psychics to the feeling, connected either to natural wants (Freud) or to cultural prototypes (Jung).

At the *eighth – orientalist –* stage, in the second half of the 19th century and the early 20th century, the mentality of the West enters into a dialogue with the cultures of the East. Irrational tendencies are strengthened due to the «philosophy of life» of Schopenhauer and Nitshe, theosophy of Gurdijev, Blavatskaja and the teachings of Steiner, Rerih and other thinkers, who were trying to convey a new life-giving impulse to the decrepit eurocentrism through dialogue with the cultures of India (the works of Vivekananda, R.Tagor), China, and Japan. In this case, reflexion became the multicultural explication of spiritual specifics and mutual cultural ties between the West and the East. Later, in the 20th century, the intercultural reflexion was rationalized both in science (L.Gumilev) and in the arts (H.Hesse, N.Gumilev).

The *ninth – culturedigmal* – stage is characterized by the beginning of the global crisis of the world civilization. It started after the European civilization had lost its wholeness as a result of World War I and the revolutions that followed (in Russia, Germany, and Hungary). In the process of reconsidering the paths and fate of European culture, looking for new models of development, and reappraising the values, one could witness ideological-political, literary-artistic and scientific-philosophical reflexion. In the latter case there is a dialogue of philosophical culturedigms (humanitarian and scientific, eurocentric and traditionalist, etc.) and scientific paradigms (analytical and holistic, atom and system, etc.).

The most vivid example of the dialogue between culturedigms is the work of O.Spengler «The Dawn of Europe», where the reflexive stylistic characteristics of artistic culture symbolize the development of the way of life, ideology, philosophy, science and art of the European civilization in its interaction with other cultures (mainly with Ancient Egypt and the East). On the other hand, V.Diltey, when discussing the dialogue of sciences about Nature and Spirit in his work «The Understanding Psychology», culturally and methodologically reflects the interaction of scientific and humanitarian knowledge.

In the context of such culturedigmal and paradigmal reflexion in the first half of the 20th century there appear a number of new metasciences of a syntactical type: technology (A.A.Bogdanov), praxiology (T.Kotarbinsky), reflexology (V.M.Behterev), ergonology (V.N.Myasischev), psyhotechnique (G.Munsterberg), akmeology (N.A.Ribnikov) [16], cybernetics (*N.Wiener)*, ecology, gerontology, hermeneutics, euristics, reflexics, etc.

At the *tenth – self-dialogical –* stage in the second half of the 20th century, M.M.Bahtin carried out the analysis of the role of dialogue in the development of literary-artistic culture (mainly using the works of F.Rabelais and F.Dostoevsky) and made the principle of dialogue in the formation of the European civilization (on the material of humanitarian sciences [2]) reflexive. Later on, the followers of M.M.Bahtin (as well as of L.S.Vigotsky, V.I.Vernadsky, etc.) analyzed the development of dialogism in natural and social sciences (V.S.Bibler, A.F.Ahutin, V.L.Rabinovich, etc.). Here the ancient, Christian, Renaissance and rationalist preconditions and types of dialogues (from Socrates-Plato through Galileo-Kant to Vigotsky-Bahtin) were analyzed in terms of reflexion. This enabled V.S.Bibler [3] to develop his philosophical and pedagogical conception about the «School of the Dialogue of Cultures», which would constructively implement the philosophy of education humanization, based on Bahtin's principles of dialogism and polyphonism. These principles developed along different lines in opposition to the official Soviet dialectics on the grounds of content-genetic logic and methodology.

At the *eleventh – polylogical –* stage, in the second half of the 20th century, the dialogue is seen as a polylogue (as a constellation of interacting dialogues) that actualizes a variety of different aspects and points of view, and personal and professional positions. The norms, reasons, means and methods of social behavior and joint activity are reflexively thought over in order to make their participants cooperate and to organize the process of their effective interaction. A constructive example of the development of the theory, methods and practical realization of this polylogue is provided in the work of the Moscow Methodological Society during 1950-1980s (N.A.Alekseev, V.A.Kostelovsky, I.S.Ladenko, V.N.Sadovsky, V.S. Shvirev, E.G.Judin, etc.) led by G.P. Shchedrovitsky [19]. While the founders of this group were philosophers A.A.Zinovjev, M.K.Mamardashvili, B.A.Grushin, the psychological and pedagogical realization of its principles and technologies of the organization of mental activity was carried out by V.V.Davidov, N.I.Nepomniatschaja, V.M.Rozin, etc. It was within the limits of this particular movement that reflexion became the means of organizing a dialogue and a polylogue both in methodological discussions and experiments (G.P. Shchedrovitsky, V.A.Lefebvre) and in psycho-pedagogical research and technologies of forming reflexive thinking (N.G.Alekseev, V.V.Davidov, I.N.Semenov, etc.). This became a precondition for forming psychological mechanisms to ensure the humanization of a person's education (N.I.Nepomniatschaja, V.M.Rozin, I.N.Semenov, etc.).

At the *twelfth – reflexive –* stage, in the late 20th century, the development of dialogue and polylogue was carried out through a reflexion that was specially actualized, formed and organized to serve in the problematic and conflict situations of the formation of a person as a creative individuality [12]. Our theoretical and experimental research [14-18] in 1971-1991 led to the discovery of the fact that reflexion was not homogeneous. We established its leading, central-to-the system role in the organization of thinking and the emergence of insight and also defined its technology through the differentiation of such types of reflexion as intellectual, personal, interpersonal, communicative, cooperative, existential, and cultural. The technologies of using each of these types as a means of cultivating individual, dialogue and polylogue thinking, developed by our scientific school [1, 5, 6, 11-18] of reflexive pedagogy and psychology, make the development of a person's creative potential possible both under the conditions of individual self-perfection and training reflexive games. These technologies, which develop the thinking and personality of students and teachers, scientists and managers, were tested in experimental training and introduced into secondary, higher, complementary and continuing professional education [12], ensuring its humanization on the basis of the principles and methods of reflexive psychology and pedagogy.

In the history of European philosophical, psychological and pedagogical thought from Socrates and Plato through Descartes and Locke, Fichte and Hegel to W.James and J.Piaget, L.Vygotsky and S.Rubinshtein one can find an increasing interest in studying the role of reflexion in the development of dialogue thinking. In the modern Western science various studies of the phenomenology of reflexion (*A.Buzeman, 1925; A.Mark, 1948*) are conducted within the limits of metacognitive psychology (*V.Lorner, 1982; V.Matteus, 1968*), and there exist examples of the constructive usage of reflexive techniques in the practice of intensive game communication (*A.Shon, P.Mezirov, 1983*). However, according to V.Matteus [7], the most diverse psychological mechanisms of reflexion were studied in Soviet psychology on a solid philosophical and methodological basis [8].

It is important to mention that the humanization of education through dialogue reflexion and polylogue game reflexion is taking place in the training of practical psychologists and social teachers [9, 13] at Zaporozhsky (R.N.Vasiutin, L.I.Mischtik, Y.A.Renetsky) and Kharkov (S.A.Laktionov) universities, at the Vinnitsa Teachers' Training Institute (S.A.Slobodianiuk), and at the Artek Teachers' Training College (O.A.Donik) in Ukraine, as well as in Russia [12, 16] at Moscow, Novosibirsk, Nizhy-Novgorod and Tambov universities and the Biisk Teachers' Training Institute, and also in Germany at the University of Bohum (V.Matteus [7]).

Summing it up, the psycho-pedagogical technologies elaborated to develop thinking and personality in a dialogue and polylogue (including a reflexive one) serve as constructive methodological methods of the humanization of continuing general and professional education.

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A LINGUO-STYLISTIC DEVICE AS MEANS OF ETHICAL EVALUATION

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Konstantin K. Bogatyrev
Compaque Corp.
Senior programmist

A scholar attempting to apply Lefebvre's reflexive model to a study of literary characters is immediately confronted with the challenge of separating the authorial viewpoint from that of the reader.

A discovery made by Dean Worth, an American Slavic scholar, is particularly interesting in this respect. In his analysis of the *Igor Tale* [5], a medieval Russian poem about a failed expedition by Prince Igor of Novgorod Seversky against the tribe of Polovcians, Worth describes a stylistic device used by the *Tale's* anonymous author to create ethically marked images out of phrasal components whose ethical values are determined by the semantic context.

According to Worth's analysis, the semantic primitives used in the creation of such images are

(1) The meaning of a predicate: an image involving upward motion or high position is evaluated positively; downward motion or low position is evaluated negatively.

(2) Meanings of nominal arguments (subjects and objects): Russians, as well as things and concepts that are known to be related to Russians directly or metonymically, i.e. falcons, trees, grass, scarlet standards, praise (*xvala*), etc., are positive, while the enemy and their metonymic equivalents, such as swans, the Div (a mythical bird-like creature), gray ravens, infamy (*xula*), have a negative value.

Worth proceeds from the assumption that the author of the *Tale* uses a strict binary system of ethical values rather than a bipolar continuum. In other words, for the *Tale's* author people and things are either good or bad with no intermediate values. (In this respect the *Tale* is different from such texts as *The Iliad,* where characters can be ranked relative to other characters based on a complex set of criteria.)

Furthermore, Worth demonstrates that a sentence comprising ethically relevant components contains a positive image if a positive predicate has positive («Russian») nominal arguments or if a negative predicate has negative («Polovcian») arguments. A combination of a positive predicate with negative nouns or that of a negative predicate with positive nouns creates a negative image.

For example, the images of high-flying (+) Russian standards (+) and of enemy heads (−) rolling on the ground (−) are positive, while the ominous *Div* (−) crying from the top of a tree (+), i.e. an enemy symbol in a high position, is negative.

The advantage of Worth's approach is in its ability to eliminate the influence a researcher's viewpoint might have on his understanding of the subject's inner world, in particular when the scholar and the subject are separated by an 800-year distance.

Worth determines that, with the exception of the beginning of the *Tale* (part of which is a reminiscence of the glorious past) and the final episode describing Igor's return, the narrative is dominated by negative imagery, such as the rout of Igor's army, complaints about the discord among Russian principalities, Russian wives lamenting the loss of their loved ones, the author's invectives against Russian Princes Igor and Vsevolod, Prince Svyatoslav's «troubled» dream, parts of Igor's wife's lament, etc. In fact, such an abundance of negative images in a heroic epic seems quite unusual: Igor, the epic hero, suffers a disastrous defeat and allows himself to be captured by the enemy, yet the author's view of the protagonist remains positive. Furthermore, a tale of a Christian prince's expedition against a pagan tribe is filled with pagan imagery and emphasizes the characters' close relations with the pagan world (a kind of «neo-paganism», according to Roman Jakobson).

These apparent contradictions – a positive evaluation of a defeated hero and of his less then triumphant return from captivity as well as the abundance of «neo-pagan» imagery in a Christian epic – can be explained if we assume that the subject of the *Tale* is not a failed military expedition but, rather, the inner world of the protagonist.

From the very beginning, the author has a positive view of Igor and of his intentions: Igor «*...tempted [his] mind with his strength and sharpened [his] heart with gallantry / Filled with fighting spirit [he] moved his daring troops to the Polovcian lands for the Russian land*». At the same time, Igor is unable to see that the expedition is doomed: «The *Prince's reason was burning with desire, and his passion to taste the Great [river of] Don stood between him and the omen*». Furthermore, as the prince and his army set out on the ill-fated expedition, he ignores what the author and his contemporaries would interpret as numerous bad omens, such as a shadow that descends upon the army or

the cry of the demonic *Div* from a tree top (in both cases, a combination of a «negative» subject with a high position). In other words, Igor receives a stream of negative inputs and fails to understand them. In terms of Lefebvre's reflexive model, such a character «knows not what he does»; regardless of intentions, any negative pressure from the outside world will be transformed into a negative action. Using Lefebvre's notation, Igor's inner state before the defeat and captivity may be represented as:

$$f(x_1, x_2, x_3) = X_1,$$

where $x_1 = 0$, (i.e. the author's view of the situation is negative) and $x_2 = 1$, (the subject views it as being good). Although, according to the *Tale*'s author, $x_3 = 1$, i.e. the subject's intentions are good, they do not translate into actions, since, according to Lefebvre's axiom, $f(0, 1, x_3) = 0$, for any x_3 from [0,1].

The central part of the *Tale*, which, according to Worth, represents an «almost uninterrupted string of negative images,» is followed by a stream of positive imagery in the shorter final part. This apparently signifies an abrupt change in the protagonist's inner state: since the *Tale*'s author has an invariably positive view of Igor's personality and intentions, a shift in the authorial view of the situation could only be attributed to a change in the value of x_2, i.e. the hero's perception. According to Lefebvre's model, the subject, who is still experiencing external negative pressure (in Igor's case – the humiliation of defeat and captivity, the jealousy of more successful princes, and, judging by some hints, the necessity to bargain with the victorious enemy), gains the freedom of choice if his view of the outside world becomes negative:

$$f(0, 0, x_3) \equiv x_3.$$

In Igor's case this means that his good intentions will now translate into good deeds.

In Lefebvre's words, the ethical paradox of the *Igor Tale* lies in the fact that prison frees Igor's will. Indeed, the *Tale* describes the scenes of Igor's flight from captivity in terms of a change in his inner state, while saying very little about the factual side of the events. It does mention, however, that God had shown Igor the path to freedom and, incidentally, the pagan symbolism predominant throughout the text is replaced in these final scenes with Christian imagery. In other words, for the *Tale*'s author, the freedom of choice is associated with Christianity, while the hero's inability to see evil is viewed as pagan.

Such formal methodology, which allows us to evaluate the authorial viewpoint using reliable linguistic criteria, demonstrates that reflexive analysis of literary works is feasible.

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CHRONICLE OF EVENTS

Symposium

International symposium «Reflexive control» (October 17-19 2000)

As part of the Federal Program devoted to the third millennium, Moscow has hosted an international symposium on problems of reflexive control.

The symposium was organized by the Institute of Psychology of the Russian Academy of Sciences and the organization uniting the leading members of the Russian business community, Non-Commercial Partnership «New Investment Doctrine», with the support of the Russian President's Administration. Some 200 participants, mostly Russian, American, Canadian, Ukrainian, and Moldavian researchers, met (the first meeting was held at the President Hotel, the traditional venue of politicians, financiers and economists) to look for answers to many pressing issues that face the world community.

The Russian authorities of all levels and the general public are becoming increasingly aware that the resources of the traditional social technologies have been exhausted. This awareness is growing in many other countries as well.

In September 2000 the UN Secretary General Kofi Annan came up with new ideas about the development of the world community. These ideas are based on global approaches to solving the many tasks that face humanity. Developing them, the Russian Federation has put forth several proposals, including elaborating a New Investment Doctrine.

These proposals, however, cannot be effectively carried out until there are the political, economic and other stereotypes inherited from the Cold War years, when mankind balanced on the brink of a nuclear catastrophe.

The analysis, understanding, and organization of reflexive processes matching the tasks of social transformation is instrumental in overcoming the stereotypes, consolidating subjects of society, and establishing an atmosphere of mutual trust and understanding. The reflexive approach provides a basis for science integration and creation of organic links between science and practical tasks.

Reflexive control-related problems have featured prominently in Russian culture since the concept of reflexive control was introduced over 30 years ago by the Russian researcher Vladimir Lefebvre. The concept and the related reflexive system have influenced the development of the natural and social sciences and the humanities. Though both Russian and American researchers have developed related ideas, they used different approaches. American works studying reflexive processes have been greatly influenced by the behaviorist past. In the works of Russian researchers this branch of science is integrated with the subject (subject-action) approach. For all their differences, the two approaches complement each other, stimulating the growth of reciprocal interest and scientific contacts.

The symposium had the purpose of bringing science closer to the practical tasks of social transformation and creation of a civil society in Russia and tasks aimed at the stabilization of global processes.

In the context of reflexive processes and reflexive control, the symposium addressed the following practical questions:

1. Why is it impossible to solve any problems of economic reformation of Russia without taking into account the psychological factor? Why have the American models of the market economy proved ineffective in Russia?

2. Why do any innovative projects or investment programs prompt social conflicts?

3. Why have we failed to mobilize Russia's intellectual and spiritual potential to tackle the strategic problems of development?

4. Why have we failed to effectively use new information technologies while solving strategic problems?

5. Why does the political sphere make wide use of technologies that hamper the building of a civil society in Russia?

6. Why does the state fail to establish flexible relations with the free press and religious institutions?

7. Why has Russia lost so many information wars?

The reflexive approach enables us to offer new mechanisms for the solution of these questions. These mechanisms can help harmonize the involved relationships of individual and group subjects in a community.

Zadorozhnyuk I. Ye.
Psychological Journal

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E-mail: cbnrb.mos@mtu-net.ru
Internet home page: www.cbnrb.ru

NEW BOOKS

Reflexive Control. Collected Articles.
International Symposium. *October 17-19, 2000*.
M. /Ed. by Lepsky V.E., Moscow, Institute of Psychology
Press, 2000. 192 pages.

The Collected Articles contain 20 articles in seven sections.

HISTORY PAGES

Lefebvre V.A. (*USSR*). Logic of Reflexive Games and Reflexive Control.

1. REFLEXIVE CONTROL (methodological, theoretical, and methodic aspects)

Gordeeva N.D., Zinchenko V.P. (*Russia*). Reflexive Control as Condition of the Realization of Movement and Building of Purposeful Action.

Zhuravlyov G.E. (*Russia*). Reflexive Control in the Paradigm of Active Systems.

Zhuravlyov G.E. (*Russia*). Revealing of Reflexive Control Habits According to the MMPI Results.

Lepsky V.E., Stepanov A.M. (*Russia*). Reflexive Control in Totalitarian Sects.

2. REFLEXION AND ACTIVITY

Ivanov F.E. (*Russia*). Reflexive Culture as Basis for Psychology of Security of Professional Activities.

Rozin V.M. (*Russia*). Concept of Reflexion in Philosophy and Modern Methodology.

Solntseva G.N. (*Russia*). Reflexion and Activity.

3. MATHEMATICAL MODELS OF REFLEXIVE CONTROL

Belyaev I.P., Kapustyan V.M. (*Russia*). Reflexive Control in Perception of Art.

Borshevich V., Lepsky V., Oleinik V., Tudos V. (*Moldova-Russia*). Informational and Logical Models of Reflexive Systems.

Grigoriev E.P. (*Russia*). Reflexive Synthesis of Alternatives in the Golden Section Metrics.

Petrovsky V.A. (*Russia*). Algebra Cogito in Transcendentions

Taran T.A. (Ukraine). Polyvalent Boolean Models of Reflexive Choice.

Lewis Dudley Miller (*USA*). Reflexive Determination of the Essential Singularity Structure of Decision Theoretic Multi-attribute Utility Functions.

4. REFLEXIVE CONTROL IN NEW INFORMATION TECHNOLOGIES

Norseen John (*USA*). Mathematics, BioFusion and Reflexive Control for Sentient Machines

5. REFLEXIVE CONTROL IN ECONOMICS

Birstein B. (*Canada*), *Borsevici V.I.* (*Moldova*). Reflexive Structures and Stock Markets.

6. REFLEXIVE CONTROL IN POLITICS

Kononogov S.A., Kudryashov A.S., Kretov V.S., Frolov I.V. (*Russia*). Practical Aspects of Using Reflexive Control Mechanisms in Information and Analytical Technologies in Political Sciences.

Lepsky V.E. (*Russia*). Reflexive Analysis of Political PR in Russia: Aspect of Creating a Civil Society

7. F ROM INFORMATION WARS TOWARD CONTROLLED CONFRONTATION AND COOPERATION

Ionov M.D. (Russia). Intellectual Support for Decision Making in Reflexive Control of the Enemy

Ionov M.D. (Russia) Role of the Cogitative Experiment in Reflexive Control of the Enemy

The collections may present interest for both researchers and practical workers in a wide range of knowledge, notably, psychology, sociology, political science, pedagogy, economics, informatics, and artificial intelligence.
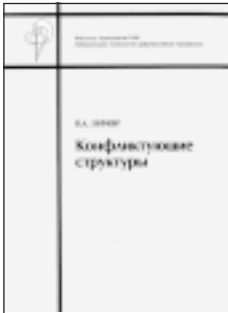
Lefebvre V.A. Conflicting structures. Third edition. Moscow, Institute of Psychology Press, 2000. 136 pages.

When the first edition of Lefebvre's "Conflicting Structures" appeared in this country in 1967, no one could possibly predict the impact the book would have on the public consciousness of the late 20th century. At the time of the first publication, all topics related to human consciousness were under ideological control. But by introducing the term «reflexion», the author took the problem of consciousness beyond the limits of ideological pressure. This stimulated the appearance of new works and even entire trends that addressed the problem of reflexion. It's difficult to believe today that before the appearance of the book, reflexion, except for in professional philosophy, was understood only as a vexing characteristic of an intellectual given to much thinking and little action. Such concepts as ability for reflexion, reflexive control, a reflexive rank, and reflexive games, which are all in common use today, were introduced by Lefebvre in this book or in his earlier works. The author also introduced the all-important concept of a reflexive system. It was this concept and also the theoretical schemes proposed by him that helped to present such large-scale social phenomena as information wars in the form of the interaction of macro-subjects capable of multiple reciprocal reflection and of reflexive control.

Lefebvre's theory has had a considerable impact on foreign researchers. Not accidentally such outstanding philosophers as Carl Popper and Anatol Rappoport found it necessary to take part in the wide discussion prompted by Lefebvre's works in the West. It's worth noting that one of today's most successful stock market competitors George Soros, describing the methods he applied to influence the world's stock mar-

kets, has used the concepts that in fact coincide with those introduced earlier by V. Lefebvre.

The book has one more aspect. The author believes that reflexive systems are not accidental in the Universe. Back in 1967 he already saw the mission of the future cosmology in «integrating the biological reality into the picture of the world as a certain 'norm' that would be natural and necessary in this picture.» The phrase comes from one of the first wordings of the famous anthrop-

ic principle indispensable in modern cosmology.

The new edition of Lefebvre's monograph was prompted by preparations for the International Symposium on Reflexive Control held by the Institute of Psychology of the Russian Academy of Sciences on October 17-19, 2000.

Lepsky V.E.
Institute of Psychology of the Russian
Academy of Sciences

Birshtein B. Russia of great shocks. Dramas of the newest history. Kishinev. Concern "Press". 2000. 255 pages.

This book is an attempt to analyze what has happened in Russia in the past 10 or 15 years. The author is known in many countries as a successful businessman, talented manager, and an economic advisor to the presidents of several C.I.S. countries. That Boris Birstein is also a researcher with an international reputation is not so widely known. Doctor of Economics and Philosophy, Professor Birstein has written several monographs and books on social and political subjects. He shares his experience in applying technologies of economic reforms in the countries where transition from public to private ownership is painful and long-running. His articles on the shadow economy in Russia suggesting ways to make it work for the country have aroused interest among practical economists and scholars in many countries. The author's efforts aimed at solving complicated social conflicts are widely known and appreciated. For one, he contributed to ending the military conflict in the Dniestr Region in Moldova, a

former Soviet republic and now one of the C.I.S. countries.

The author sets himself the difficult task of comprehending the economic, political, social, and psychological experience of the so-called perestroika and the post-perestroika period. He strives to help the countries that occupy vast territories populated by hundreds of millions of people and have a strong influence on the alignment of forces on the world's economic and political scene to build societies that would not threaten the world with social and political catastrophes but would contribute to the creation of a common global home. This concerns Russia above all as a guarantor and an indispensable figure on the European and American economic and political scene.

Birstein has made a tangible contribution to the solution of this problem. The success may be attributed to his courage in addressing sensitive issues often sidestepped by high-ranking analysts and also

to his use of methods of reflexive analysis that register reflexive processes in strategic decision making with revealing the domineering structures of political leaders' consciousness. Explaining events that have taken place and offering prognosis, the author harmoniously combines the objective trends of development and the subjective contribution of figures on the world political and economic scene.

The work focuses on the following questions:

- How could several thousand people, who described themselves as democrats or otherwise, displace such a gigantic empire as the Soviet Union and send it into a different orbit?

- What technologies were used to create idols and then destroy them?

- What forces changed the mentality of a nation that seemed to be a monolith?

- What prompted the economic transformation programs alien to Russia as a specific country?

- Was transformation without the steering wheel a mistake or betrayal?

- Are the Pirrhic victories of independence the historically predetermined result or the strategy of the interested?

- Given the lost opportunities, is the process reversible?

- Are corruption, stealing, and the shadow economy - these three sources and three components of "Russian capitalism" – the result of the former empire's socio-economic genetics or the new formation of abortive reforms?

- Are the scandals in the "noble family" a manifestation of loose morals or the new technologies used to win the political and economic space?

- Standing on the threshold of the third millennium, will Russia finally elect a leader who will be a statesman with a creative potential or will it once again miss its opportunity and continue its march on this road of lost opportunities?

Boris Berstein provided or, at least, approached the answer to many of these questions. It must be pointed out that he did this with love for Russia and an understanding of it as a specific country.

Zadorozhnyuk I. Ye.
Psychological Journal

PRESENTATIONS

Interdisciplinary scientific and practical seminar
"REFLEXIVE PROCESSES AND CONTROL"

A new monthly seminar has begun its work.

Organizer: Laboratory of Psychology of Reflexive Processes at the Institute of Psychology of the Russian Academy of Sciences

Supervisor: Vladimir Lepsky

Location: facilities provided by the organizer or other institutions

The first session, which took place on March 5, 2001, as a round table, considered the scientific and socio-cultural role of the reflexive movement in Russia.

Materials of the session are published in this issue of the journal.

The second session, on April 23, 2001, (at the Russian Academy of Sciences Institute of Management Problems) considered reflexive processes in the systems supporting management activities.

Speakers: Pranguishvili I.V., Brushlinsky A.V., Lepsky V. E., Shubin A.N., Maximov V.I., Malinetsky G.G., Grigoriev E.P., Frolov I.V., Frolov Yu.V., Abramova N.A. About 100 participants.

The third session, on May 28, 2001, arranged in the form of a round table, considered **«The Science and Practice of Strategic Control in Russia: Reflexive Aspects».**

Introduction by Lepsky V.E. Problem of Strategic Subjects as the Key Problem of Russia's Development.

Speakers: Anisimov O.S., Abaev L.Ch., Danilenko I.S., Dudchenko V.S., and others. Over 70 participants.

IN THE NEXT ISSUE:

Problems of Forming Strategical Subjects
Vladimir Lepsky (*Russia*)

Strategical Decisions and Morals
Vladimir Lefebvre (*USA*)

Stratagems of Reflexive Control in Western and Eastern Cultures
Boris Birshtein (*Canada*), **Victor Borsevici** (*Moldova*)

Russian Reflexive Control Theory and Military
Timothy L. Thomas (*USA*)

Representation of Reflexive Control Concepts in Mathematical Models of Reflexuve Choice
Tatyana Taran (*Ukraine*)