

International
Interdisciplinary Scientific and Practical Journal

**REFLEXIVE PROCESSES
AND CONTROL**

No. 2

July-December 2002

Volume 1

REFLEXIVE PROCESSES AND CONTROL

International Interdisciplinary Scientific and Practical Journal

FOUNDERS: *Institute of Psychology of the Russian Academy of Sciences,
Vladimir Lepsky (Russia)*

Semiannual publication
(English Edition)

No. 2. July-December, 2002. Vol. 1

Editor-in-Chief: V.E. Lepsky (Russia)

E-mail: lepsky@online.ru (lepsky@psychol.ras.ru)

Editorial Council:

S.A.Umpleby (USA), B.I.Birshtein (Canada), [A.V.Brushlinsky](#) (Russia),
V.P.Zinchenko (Russia), V.A.Lefebvre (USA), G.V.Osipov (Russia),
V.F.Petrenko (Russia), D.A.Pospelov (Russia), I.V.Prangishvili (Russia),
V.V.Rubtsov (Russia), V.S.Stepin (Russia), A.A.Streltsov (Russia),
Yu.E.Fokin (Russia), Yu.P.Shankin (Russia)

Editorial Board:

J.Adams-Webber (Canada), O.S.Anisimov (Russia), K.K.Bogatyrev (USA),
V.I.Borsevici (Moldova), O.I.Genisaretsky (Russia), I.E.Zadorozhniuk (Russia),
G.G.Malinetsky (Russia), V.A.Petrovsky (Russia),
S.P.Rastorguev (Russia), V.M.Rozin (Russia), G.P.Smolian (Russia),
T.A.Taran (Ukraine)

Editorial and Publishing Group:

B.M.Borodenzov, M.I.Belkin, V.N.Krylova

*Registered in the Ministry of Press, Television and Radio Broadcasting
and Mass Communications of the Russian Federation
Registration Certificate СМН III №77-7309 of February 19, 2001*

Address: Yaroslavskaya St. 13, Unit 430, Moscow, 129366, Russia

Fax: 282-92-01

E-mail: lepsky@online.ru

<http://www.reflexion.ru>

*Published with the support of Boris Birshtein
(Doctor of Economics and Philosophy, professor)*

No part of this publication may be reproduced in any form or by any means without
the prior permission of the editorship.

The editorship's point of view may differ from that of the authors.

The manuscripts are not reviewed or returned to the authors.

TABLE OF CONTENTS

<i>From the Editor</i>	4
------------------------------	---

GLOBAL TERRORISM - GLOBAL CHALLENGE TO HUMANITY

<i>Lepsky, V.E. (Russia)</i> . Formation of Strategic Subjects: Outlining the Problem	5
<i>Birshstein, B. (Canada), Borsevici, V. (Moldova)</i> . Stratagems of Reflexive Control in Western and Oriental Cultures	21
<i>Round Table (8 October 2001)</i> . Formation Problems of Reflexive Subjects	37

REFLEXIVE PROCESSES AND THE MILITARY

<i>Thomas, T.L. (USA)</i> . Reflexive Control in Russia: Theory and Military Applications	60
---	----

REFLEXIVE PROCESSES AND INTERNET

<i>Zinchenko, V.P. (Russia)</i> . Reflexive Processes in Internet Interactions (at the Example of Chess Games)	77
--	----

REFLEXIVE PROCESSES AND SECOND ORDER CYBERNETICS

<i>Lefebvre, V.A. (USA)</i> . Second Order Cybernetics in the Soviet Union and on the West	83
<i>Lefebvre, V.A. (USA)</i> . The Law of Self-Reflexion: A Possible Unified Explanation for the Three Different Psychological Phenomena	91
<i>Taran, T.A. (Ukraine)</i> . Representation of the Principles of Reflexive Control in Mathematical Models of Reflexive Choice	100

CHRONICLE OF EVENTS

The 3rd International Symposium "Reflexive Processes and Control"	113
The 4th International Symposium "Reflexive Processes and Control" (preliminary information)	117
Interdisciplinary scientific and practical seminar "Reflexive Processes and Control"	118

NEW BOOKS

<i>Reflexive Processes and Control</i> . Proceedings of the 3rd International Symposium	119
<i>Lefebvre, V.A.</i> Algebra of Conscious	119
<i>Birshstein, B.</i> Partnership for Life	122

FROM THE EDITOR

This issue of our journal focuses largely on the problems raised at the 3rd International Symposium “Reflexive Problems and Control” (October 8-11, 2001, Moscow). The world has drastically changed following the tragic events of September 11, 2001. This had an impact on the reports of all participants.

The international community of researchers in the area of reflexion that had taken shape by that time could see certain alarming trends. More than that, two years ago in Los Alamos and in Washington, one month before the tragic events, we, our American fellow researchers and experts of the U.S. Defense Ministry discussed a joint project aimed at creating reflexive technologies of protection from terrorist organizations. Unfortunately, bureaucratic obstacles did not allow us to make our intellectual contribution to the technologies of early diagnosing and neutralizing terrorist threats. Can Russian and foreign experts join their forces today? Experts are certain it would be wise to do so. It’s time to understand that it is our common concern to ensure security and steady development on or planet. It’s time to stop being influenced by irrational fears of possible threats. It’s time to learn how to suppress them before they start to control us.

The key role in all these processes must be played by national and international business, political, cultural and educational elites. We intend to make the journal interesting and useful for members of these elites as well as for both researchers and executives prepared to shoulder the responsibility for ensuring the security and steady development of mankind. We must learn to analyze the conditions of our existence using the tools we employ analyzing reflexive technologies. That’s the only way to prevent many global threats and even eliminate their causes. That’s the only way for us to survive.

Vladimir Lepsky

FORMATION OF STRATEGIC SUBJECTS: OUTLINING THE PROBLEM

© V.E. Lepsky (*Russia*)



Vladimir E. Lepsky
Institute of Psychology
Russian Academy of Sciences
Doctor of Psychology

1. Legacy of the 20th century: stereotype mechanisms of interaction and development

Entering the new millennium, humanity is becoming increasingly aware that the old paradigms of organizing the world order and relations among the states, ethnic groups, cultures, confessions, and other social formations and their carriers have become hopelessly outdated and can bring about a global catastrophe.

Only recently we were at the brink of a nuclear disaster. Though this threat has been considerably reduced, there is no guarantee that nuclear weapons are safely out of reach of extremists.

We have managed to set in motion new mechanisms, which allows us to hope we can prevent an ecological catastrophe. But we cannot be sure we will be able to stop the process of environmental pollution before it becomes irreversible.

Shaping a global information community threatens to destroy ethnic cultures and their carriers. This will do irreparable damage to mankind. Even in the face of these threats, however, the world community in its basic documents underestimates their danger [13].

The “unexpected” threats of global terrorism have confronted mankind with new problems and, as always, have caught it unawares.

Why does it happen so that mankind always finds itself in situations of “unexpected” threats (nuclear, ecological, informational, terrorist and others)? Each time man-

kind is too late to recognize these threats and has to make Herculean efforts to neutralize them (with no guarantee that it can neutralize them at all).

The answer is simple: Mankind is not free to choose a path along which it will move. It has no developed mechanisms of reflexion that would allow it to organize the processes of development. It has limited its own freedom by remaining in the captivity of stereotypes, being unable to get rid of them in the past millennium. There are five basic stereotypes [8, 9].

Stereotype 1. The prevailing casual historical or genetic approach, when causes of phenomena are to be found in the past, and the basic question is “*Why?*”. Philosophy calls this approach Laplace determinism, which assumes that the Universe is changing from an organized state to a less organized state.

Stereotype 2. Scientific and technical progress is looked upon as a natural mechanism of human development; and scientific truth is allowed to exist independently from a moral approach; the main question is “*How?*”

Is mankind always ready to use scientific discoveries and related technologies? Does it have mechanisms that can answer this question and, if needed, stop the process of introducing them? Apparently, it does not.

Stimulated by the demands of the consumer society, the chaotic processes of introducing products of scientific and technical progress to our daily life have made mankind a hostage of rapidly growing threats to its very existence. Our security and development depend today not only on the national concepts and military doctrines of different states and on the actions of their leaders but also on the goals of morally immature groups and individuals.

Stereotype 3. The image of the consumer society as an advanced model with no alternative.

Are all the people living on earth so eager to participate in the endless race for ever-growing material possessions? Where will this race take all of us, given the limited resources of our planet? Will all people be willing to exchange their spiritual treasures and freedom for apparently excessive material wealth? (I wouldn’t wish such a bargain to my children and grandchildren).

Stereotype 4. The prevailing idea of rationality in the economic, political, military and other social spheres.

The 20th century may be described as the age of the rationality. The market economy rests on rationality. The rational approach to wars has brought mankind to a pathological state, when military strategists can seriously consider moves that can result in millions of nuclear war victims. The same approach has given birth to the concept of “the golden billion”, which allows some people to think they have the right to decide who will live on the planet and who will not.

Stereotype 5. The prevailing concept of individualism in shaping social relations and communities (a western model) is that subjects have hypertrophied rights and minimized obligations of the mutual regulation of goals, relations and actions.

Individualism is the basis of the market economy. Yet it has brought the world to an unstable unipolar system and become one of the main reasons for the wave of terrorism we are swept by today.

The said stereotypes strictly determine the goals of mankind. The first three are naturally interrelated. They determined the driving force of human development in the second half of the 20th century. Yet, if mankind fails to become the subject of its development, this force will inevitably bring it to a catastrophe.

The fourth and fifth stereotypes are largely connected with mechanisms regulating mutual relations among subjects. Many brilliant minds of mankind [17, 19] have made their contribution to the victory of the rational over the moral, but only today mankind began to become aware of the crucial nature of this problem.

Today, after the tragic events of September 11, many Americans are concerned with the question "What makes them hate us so much?". Thousands of rank-and-file Americans sincerely believe they are virtuous people. They break no laws, love their children, give money for charity purposes, and are regular churchgoers. Unfortunately, they have no appropriate answer to this question. One can often hear the opinion that people living in other countries simply envy them. The correct answer, I believe, comes in an article by an economic expert of the New York analytical center *The Globalist*: "... we know almost nothing about the world. We are not interested in Iraq or former Yugoslavia. Reports on traffic congestions take more time and place in our TV news than international events" [1].

Individualism must not play the key role in regulating relations in the modern world. Convincing proof of this is provided by the recent change in attitude toward human rights in the United States. Only a few months ago no one could have thought that the United States would give up the human rights idea so quickly and so easily. It was a strong advocate of human rights and a severe critic of the Soviet Union for its failure to observe these rights and used this criticism to split the Soviet Union. It turned out today that rights must go hand in hand with obligations and there must be the mechanism of controlling and ensuring co-existence of different subjects.

Many of the above stereotypes took shape when one could draw clear-cut borders between any two countries, localize the spheres of economic activity; when damage done to the environment by individual subjects did not result in global consequences; when mankind was not a hostage of

asocial elements and groupings; when it was correct to allow autonomous existence to separate states and other social formations. Today we see a different situation on the planet – we all depend on each other, we all live in a “huge single flat”. To regulate this communal living we need different mechanisms, mechanisms that would be based on cooperative principles, not individualism, that would allow us to ensure mutual understanding and trust among different subjects, and make possible dynamic shifts from conflicts to controlled confrontation and cooperation.

The problem of devising new “high humanitarian technologies”, based on the integration of humanities and sciences, is high on the agenda. These technologies must primarily be targeted at solving the moral and ethical collisions that are tearing modern society to pieces. These collisions are, as a rule, so complex that it is practically impossible to get a deep insight into their nature with the help of elementary moral intuition.

The range of problems requiring professional and comprehensive moral and ethical study is ever growing and includes those triggered by recent discoveries in biology and medicine, and also issues of social justice and responsibility, dilemmas in international relations, and problems of combating global terrorism.

2. “Subjectivenessless” as the main illness of mankind

Mankind is unaware of the goals and possibilities of its development, refuses to shoulder all the responsibility for its own actions before the earth inhabitants and different sociocultural formations, before Nature and the Universe. “Subjectivenessless” is the main illness of mankind.

Its virus has infected states, ethnic groups, communities, and individuals. As long as mankind remains a slave of the causal approach, it will find no principally new decisions. This explains its limited achievements in a search for mechanisms of “sustained development”. We will always be rushing to remove threats and will always be late. This fatal belatedness will end one day in a global catastrophe. We believe that in devising new concepts of human development we must use the teleological (goal-oriented, finalizing) approach as a methodological basis. This approach begins with the question “What for?” and looks for the reasons of phenomena in the “future”. It assumes that the Universe is changing from a less organized condition to a more organized condition.

This approach is intended for systems well aware of their goals and means and methods of achieving them and also of their potential and limitations. The teleological approach is based on subjectness. It is important to remember that “a cognizing and acting subject is forced to use special strategies of activity, those that take into account the specific character of man-sized developing objects” [16].

3. “Strategic subject” as a basic element of social engineering in the 21st century

Cross-causality, inter-penetration and interaction that appear in the process of solving social tasks of different types of subjects (individualities, groups, organizations and others) and different types of consciousness (individual, group, mass) stimulates many researchers to accept a generalized logical structure, invariant as to the types and carriers of consciousness. Such a structure makes it possible to analyze the processes of the informational interaction of qualitatively differing elements in common concepts without eliminating the possibilities of taking into account their specific features [12, 18]. These logical-psychological schemes deal with formalized subjects that can act as models for various types of real subjects.

To solve the pressing issues of ensuring the security and steady development of the world community we offer the concept of “a strategic subject”. This concept provides a generalized model for various types of subjects (individuals, groups, organizations, ethnic groups, states, and others) that have features that can help to overcome the five stereotypes of the 20th century.

Considering the features of strategic subjects, we regard the goal-oriented (teleological), functional (regulative-communicative) and structural aspects as the basic. A preliminary draft of separate basic characteristics of strategic subjects is presented in Table 1.

Strategic subjects are ideal patterns, which embody the qualities that could, we believe, promote the security and steady development of mankind. This thesis, once accepted, allows us to take a new look at the problem of creating generally-accepted mechanisms to evaluate and control the actions of the subjects of the world community. It also opens up new horizons for perfecting various types of subjects, from individuals to countries and various international communities. This approach must not be understood as a call to destroy original cultures and their carriers – we only offer guidelines for creating a common space of world culture and shaping the basic characteristics of the carriers of original cultures, which will create the prerequisites for intensifying the humanistic aspect in the development of mankind.

While realizing this approach, we must try to make different cultures and their carriers exert positive influence on each other, to integrate the world experience of shaping different types of subjects. Generalized differences among cultures and their carriers – “the East” and “the West” – become of paramount importance. We have made pilot expert evaluations. Young Russian foreign-policy experts were invited to give their evalu-

Table 1

Some characteristics of strategic subjects

Aspects	Individual features	Characteristics	
		Strategic subjects	Subjects polar to the strategic
Teleological (goal-oriented) aspect	Presense of goals Presense of common goals Social-oriented goals Stability of goals Conformity of realized and declared goals	Goal orientation Goal-based union of subjects Sociality Stability Goal adequacy	Passivity Goal-based difference of subjects Asociality Jokers Goal dissonance
Regulatory-communicative aspect	Reflexive control of activity and communications Dominating demands Social orientation of activity controlling mechanisms Dominating reasons for decision-making Leading ethical system [17] Leading orientation in interacting with other subjects Leading form of relations with other subjects Attitude toward the opinion (viewpoint) of other subjects Dominant of behavior in conflict situations Preparedness to make sacrifice for a common cause Freedom of action (being protected against explicit or implicit control)	Reflexivity Spiritual Social responsibility Moral and ethical First ethical system (good and evil combination is regarded as evil) Collectivism Partnership (subject-subject relationship) Tolerance Compromise orientation Sacrificing Independence	Reactivity Material Egocentrism Rational Second ethical system (good and evil combination is regarded as good: the end justifies the means) Individualism Consumption (subject-subject relationship) Intolerance Aggressiveness Egoism Dependence
Structural aspect	Division into units	Functional and goal-oriented fractionalism (part-whole)	Functional heterogeneity

ations on the scales of constructs (characteristics of strategic subjects and subjects opposed to them) correlative with the generalized subjects of “the West” and “the East”. The most obvious differences are given in Table 2.

The evaluations are of a generalized and illustrative character and may differ from those of concrete subjects.

Table 2

*Comparative assessments of the characteristics of “the West”
and “the East” generalized subjects*

Aspects and signs of comparing subjects	“The West”	“The East”
Teleological (goal-oriented) aspect	Goal orientation	Goal-based union of subjects
Regulatory-communicative aspect	Independence	Reflexivity Spirituality Collectivism Sacrifice
Structural aspect		Functional and goal-oriented fractionalism (part-whole)

Even a superficial analysis shows the usefulness of integrating the cultures of “the West” and “the East”, when the problem of establishing strategic subjects is on the agenda. This is an extremely complicated process and, perhaps, Russia, a country that has been historically regarded as a bridge between “the West” and “the East”, could mediate and catalyze such integration. This problem will apparently require the creation of new high humanitarian technologies of social engineering.

4. Is Russia ready to take the lead in creating new humanitarian technologies for establishing strategic subjects?

Russia possesses the cultural and scientific potential necessary for leading positions in creating new humanitarian technologies for establishing strategic subjects but it is not ready to carry out this mission yet. The main reason is its “system disorganization”. Among the signs of this disorganization are the following [8]:

- the state is not a clear-cut subject of control, it has failed to shape a strategy of development (understood and accepted by majority of the population), to provide normal living conditions for its citizens and guarantee the basic constitutional rights;
- a key role in controlling all spheres of public life is played by corrupt bureaucrats, criminal and other asocial elements;
- “the middle class” and elites are atrophied, disorganized, excluded from the real mechanisms of control and development;
- most of political parties and movements are merely a show;
- public (not political) formations are poorly organized and have practically no influence on the political processes;

– an overwhelming majority of citizens are socially passive, have difficult problems of self-identification (state-level, ethnic, family and others).

Recently a comprehensive assessment of the situation has been gaining ground in society. Many of the above signs have been reflected in the messages of the Russian President to the Federal Assembly.

The year 2001 saw important steps toward strengthening Russia's integrity and building of hierarchical "vertical of power." These steps were essential, but this type of organization is biased. Emergency steps must be taken to make the state better organized and, at the same time, to promote the establishing of a civil society in Russia.

Such processes must be planned and organized. We must not hope to see them unfold on their own, as was the case with the market economy.

Some mechanisms of destroying subjectiveness in Russia

The chaotic integration in the global information community will result in further ruination of Russia's unique culture and in enforcing an alien way of life, which threatens Russia's national interests and the interests of the development of the world community as a whole.

The disease of "subjectivenessless" has swept the whole of Russia. The works [3-11] consider some mechanisms of destroying subjectiveness and provide proposals as to the elaboration of mechanisms of establishing and supporting strategic subjects.

The social and economic changes in Russia have brought about crucial psychological consequences. The situation is fraught with a threat to national security, a threat that is obviously underestimated. For most Russians developments in this country are incomprehensible and senseless. De-ideologization and disintegration of social relations have led to the "atomization" and rupture of social links between society and individuals. The result was the en-masse loss of the position of a person as a subject of life [2]. Simultaneously the process of destroying the subjectness of the state was underway. This was promoted by numerous mechanisms linked with both external and internal sources of threats [3, 14].

The main mechanisms that have been destroying the subjectiveness of the Russian state over the past decade include the following:

- snatching of the initiatives in reforming the Russian economy by foreigners (by enforcing of economic models unsuitable for Russia, involving the country into debts etc);
- informational-psychological operations, professionally organized by some countries with a view to snatching state control;
- engaging some of the leaders of the Russian system of state control and using them to control Russia from the outside;
- creating favorable conditions for sweeping corruption in the system

of state control and allowing financial groupings and criminal structures to snatch control.

Being aware of oneself as an individual or a group has to do with interpreting oneself as a subject or an object. Most Russians began to think of themselves as objects in regard to society and the state.

Given that a large part of the population found itself in a “passive” position as a carrier of sovereignty and source of power, favorable conditions were created for various manipulations with the free manifestation of the will of the nation. The extensive use of various psycho-technologies was aimed at turning a person or group from a subject of activity into an object of manipulation in the interests of other persons and organizations. The effective mechanisms of destroying the subjectiveness of Russians have to do with political PR, the mass media, the downpour of violence in the culture, incongruity of the educational system with the pressing problems of social transformations, activities of cult organizations, and the failure of the intelligentsia to play an efficient role.

The general and invariant mechanisms of destroying the subjectness of Russians are connected with the pressure put on the reflexive structures of consciousness, and blocking of reflexion is the most powerful tool. Let’s take a look at some of these mechanisms.

Political PR in Russia

Political PR is a graphic example of the massive use of mechanisms destroying the subjectness of Russian citizens. There are various ways to influence the free expression of will of voters. The basic criteria of the “purity” of psychological influences and, consequently, the “purity” of electoral technologies at large, is the choice between two ways of existence of a person as a subject of activity (reflexive and reactive) [15] and the use of this orientation when choosing or constructing concrete actions [5].

Orientation at stimulating, supporting and using the “reactive” method of civil activity in electoral technologies is determined predominantly by the organizers’ intentions to control the voters’ behavior and choice. The main methods involve as a rule the shaping of “splitting” consciousness, various manipulative influences, notably, on the emotional sphere, and provocation of impulsive actions.

Orientation at stimulating, supporting and using the “reflexive” method of civil activity is determined above all by the organizers’ intention to shape the voters’ idea of goals, programs, and mechanisms to carry these out, and also of consequences for different subjects, including the voters themselves. The main task of this method is to help to carry out a comparative analysis of alternative proposals and promote the political culture of citizens.

The main methods aim at making the voters see the point, expanding the sphere of their consciousness and awareness of personal responsibility, supporting their conscious and free expression of will. This orientation creates prerequisites for using psychologically correct electoral technologies.

High on the Russian agenda today is the problem of organizing a constructive movement to create systems of detailed (particular) criteria and principles of creating psychologically correct electoral technologies aimed at building a civil society. In Russia this society is so far in embryo. There is practically no public control over the state, financial oligarchs and various corporate groupings who operate in the socio-political sphere. Large-scale election campaigns are in fact a field of struggle for power among the corporate structures. Such campaigns are a hidden informational-psychological war waged by these structures, a war in which Russians act as “unarmed” participants, or, to be more exact, a resource. To establish control over this resource, battles are staged with the wide use of the mass media and the Internet. These battles use the ethics of corporate structures, expelling other ethic systems by bribing, the use of force, and various manipulations.

In the context of building a civil society, political PR in Russia may be described as an asocial phenomenon, since those engaged in it have no civil position and are not subjects of social evolution. Russia’s political PR is a tool in the hands of moneybags. The behavior of PR agents is as a rule regulated by the ethics of the client (he who pays orders the music), or a set of the-end-justifies-the-means technologies.

The main drawback of Russia’s political PR is its detachment from all cultural and moral values (what we describe in Russia as “bezdukhovnost”) and focus on technologies (technologocentrism). This disease manifests itself in destroying the subjectness of citizens and the state.

There have appeared signs showing a trend toward curtailing the financial support of political PR. The existing PR teams, accustomed to big money, are looking for new areas of activity. In view of their functions, destructive for civil society, these areas must be radically decreased.

Cult organizations

It is safe to state that any area of human activity – religion, education, enlightenment, politics, leisure activities, psychotherapy, industry or business – produces its models of cult groups and movements. The nature of the mechanisms destroying the subjectness of citizens in the activities of cult organizations can be revealed by analyzing the reflexive processes these organizations use to affect the psychic health of citizens.

In view of the two methods of the existence of humans as the subjects of life (reflexive and reactive), let’s consider the two extreme (from the

viewpoint of what is good and evil for society) versions of organizing the transition to a new form of activity. We shall proceed from the presumption that persons who actively promote this transition are active in these processes.

Version 1. “*Development Scheme*”. Roughly it includes the following procedures:

- “*Locking the dissociation with the traditional way of living*” involves shaping the state of readiness to accept new forms of activity. A person becomes gradually aware that something must be changed and another way to live must be found, or this person is helped to acquire this awareness.
- “*Actualization of reflexion*” is the only opportunity to create or consciously choose a new form of activity and organize the process of switching over to this new form. Help from outside is crucial for this process: making what is called “reflexive exit” outside one’s own activity, making it an object of research and bringing it in line with the new forms, is a complicated process that requires methods different from those needed to carry out the initial activity.
- “*Reflexive cooperation*” means supporting a person who has made a “reflexive exit” beyond the limits of his or her customary activity, an exit into a reflexive position. Such aid determines the basis of the modern concepts of humanistic psychology. It is reflected in psychotherapy, organizational development, the development of activity on the basis of new informational technologies, the organization of political activity, management consulting, and other types of support. Orientation at ensuring the freedom of individuality prevails here over enforcing outside advice and recommendations.

When using this scheme, you become the true subject of the development of your activity. Besides you yourself develop because the procedure of actualizing reflexion either provokes the transition from the reactive method of activity to a reflexive one, or reinforces the reflexive method, equipping a person with new tools of more effective work. We can safely say that “Development Scheme” is a benefit for society because it is ultimately targeted at a free and developing individual.

Version 2. “*Scheme of Reflexive Programming*”. Roughly it includes the following procedures:

- “*Dissociation with the traditional way of living*”.
- “*Reflexive blockade*” or blocking “unauthorized” reflexive processes, which is in fact stripping a person of the opportunity to independently and consciously create activity or choose a new form for it.
- “*Social isolation*” or blocking “unauthorized” informational-psychological influences of the social environment, which is in fact depriving a person of the opportunity to influence the processes of creation or

choosing a new form of activity for his or her closest social milieu (family, friends, colleagues).

- “*Reflexive programming*” or enforcing conceptions, opinions, positions, and other psychic formations pre-established by other people so as to make the person concerned accept the offered form of activity.

Considerable differences in the orientation of the development schemes and reflexive programming are illustrated in Table 3.

Table 3

***Basic differences between the development scheme
and the scheme of reflexive programming***

Comparison aspects	Development schemes	Scheme of reflexive programming
Inclination towards a certain way of activity	Inclination towards the reflexive method of human activity	Inclination towards the reactive method of human activity
Attitude to the subject	Inclination towards preserving and shaping of human “subjectiveness”, refusal to manipulate a person	Inclination towards turning a subject into an object of control. The leading role of socialization in the norms of a cult organization
Actions in concrete situations	Inclination towards independent actions in all situations of human activity (problem-involving approach)	Inclination towards cliché (pre-determined) actions in typical situations of human activity and an inevitable appeal to the sectarian leaders for help in non-standard situations
Predominant orientation of psychological influences	Stimulating and supporting reflexive processes	Blocking of reflexion; blocking of social contacts (outside the sect); reflexive programming; the process of training and acquiring new ideas is based on emotional acceptance without critical analysis
Control structure	Flexible “horizontal” control structure	Rigid “vertical” hierarchical control structure
Basic knowledge	Procedure-related	Subject-related
Preparation of subjects for activity	Shaping basic features for the independent organization of one’s own activity	Teaching knowledge, habits and skills to use normative conceptions and methods of a cult organization

When “The Scheme of Reflexive Programming” is applied, a person becomes an object of control. The procedures of “Reflexive Blockade”, “Social Isolation” and “Reflexive Programming” help to reinforce “the reactive method of activity” and by no means help a person to develop his or her individuality. These procedures clearly limit the freedom of an individual. It will be right to say that “The Scheme of Reflexive Program-

ming” is the evil for the society because it is specifically designed to turn a human into a robot.

We have analyzed some technologies of influencing the psyche of a person used in totalitarian religious sects [11], where action according to “The Scheme of Reflexive Programming” manifests itself most graphically. The disclosure of the mechanisms of “reflexive blockade”, “social isolation” and “reflexive programming” makes it possible to formulate anew the tasks of legal control over the activities of the cult organizations. It helps to ensure the individual protection of citizens from negative psychological influences and raise the cultural level of mass media workers.

The negative role of cult organizations is also in that these are a testing ground for nurturing the “anti-humane” technologies of affecting individual and group consciousness.

Inefficient role of the intelligentsia

The Russian intelligentsia with its powerful intellectual potential is able to perceive and analyze any stratagems of complicated social systems and processes. It played a major role in the pre-revolutionary Russia allowing Russia to compete with Western Europe both morally and culturally. In critical situations it can take the lead in society, as was the case in 1991.

The intelligentsia has now lost its positions and cannot regain them. Why does it fail to be in the forefront of social transformations? We can find an answer to this question, if we analyze the most frequent opinions about the role of the intelligentsia [7]. The intelligentsia is most often regarded as:

- “translator of the Western clichés”;
- maker of the “image of the enemy”;
- permanent opponent of the authority;
- “judge and prophet”;
- “social diagnostician”.

The intelligentsia does not assume the function of the generator or, even less so, the controller of social engineering processes in society.

In the context of the problem under consideration, with a view to the Russian intelligentsia being uncoordinated and disconnected, it would be more correct to speak of Russian elites, the groups that can become strategic subjects and shape the basis for a movement toward creating Russia’s strategic elite.

The ability of the would-be strategic elite to carry out the mission of “awakening reflexion in public consciousness” does not depend only on the awareness and acceptance of the mission as such. The success depends on whether the Russian top leaders become aware of the importance of this mission and organize concrete measures to create appropriate social mecha-

nisms, including mechanisms that can neutralize the resistance of the subjects opposed to the establishment of subjects of civil society in Russia.

5. Russia on the path toward leadership in creating new humanitarian technologies of establishing strategic subjects

Over the past two years Russia has scored some success in restoring the subjectness of itself as a state of the new century. One of the main dangers threatening us today lies in the misbalance in establishing different types of subjects in society (the state, various types of social formations, elites, citizens). The emerging bias toward strengthening the subjectness of the state as compared with other social elements has hidden sources of threats for the development of this country.

Let's single out the pressing problems of the establishment of strategic subjects in Russia [8]:

- stimulating and supporting the establishment of strategic elite;
- incorporating the strategic elite in the real mechanisms of state and public control;
- search for innovative “system-creating ideas” to stimulate processes of establishing all types of strategic subjects;
- raising the cultural level of Russian citizens in the sphere of strategic control;
- creating mechanisms involving citizens and public formations in the processes of controlling Russia;
- creating an information environment for establishing and supporting strategic subjects.

Suggested Club of Russia's strategic elite

Russia has relatively little time to search for a way out of the crisis. Under the circumstances, it cannot wait for development mechanisms to take shape by themselves. It is urgent to find or shape subjects who could assume the function and carry it out. The only quick way to do this is by involving the Russian elite groups. Though these groups are atrophied, this is our only chance, and we cannot afford to miss it.

We can use this chance by setting up a club of Russia's strategic elite (business, political and cultural). The future club must become a strategic subject and create a critical mass in triggering the formation of other strategic subjects in Russia and the entire world community. A club of strategic elite must be chaired only by the president of the country. Technologies of its work must draw on the world experience of such structures and take into account the current situation and the offered model of strategic subjects.

This approach will make it possible to consolidate all the structures of society and solve many problems that seem to be unsolvable in today's

Russia. By taking the helm of the future club, the Russian President will get a most powerful mechanism of strategic influence whose efficient use as a parallel control loop will help to boost the efforts aimed at combating corruption, eliminating the threat of terrorism and solving many other tasks. In the past several years attempts have been made to create parallel control loops in some of the Russian regions (and in the country at large) on the basis of Federal districts. Though constructive from the viewpoint of control, the idea, however, did not produce sufficient results, because the “second subject”, like the “first one” turned out to be an element of the state machine. Unfortunately, the favorable conditions were not used to “grow” a new type of the subject of control within Russia’s Federal districts, which could have been the first step toward creating a civil society in Russia. We can still catch up with the missed opportunities by introducing a club of strategic elite to the strategic processes of control.

Since such an organizational scheme will most certainly be opposed by corrupt elements in the government structures, the immediate supervision of the Russian President is indispensable for the implementation of the project. The project will require new high humanitarian technologies to organize common work by various subjects, including new informational technologies [10]. The ideas of creating such technologies have been studied, for one, during the “Strategic Congresses”. The obtained results must become the foundation for shaping a new niche on the world market of high technologies.

The reflexive approach may be used as a methodological and methodical basis for creating the high humanitarian technologies of this class, for organizing inter-disciplinary works aimed at stabilizing and developing the world community on the basis of mutual understanding and trust among all types of subjects with the use of the new mechanisms of coordinating their interests, and for integration with the preservation of the original character and autonomy of each subject.

Today Russia has a chance to become the world’s leader in the development and application of reflexive technologies along the following lines:

- 1) Establishment of mutual understanding and trust among various types of subjects of the world community (states, ethnic groups, communities, citizens and others) with the help of reflexive processes.
- 2) Substantiating the goals and tasks of strategic control and development of the world community by the participation of various types of subjects (states, ethnic groups, communities, citizens, and others) with due regard for their interests.
- 3) Ensuring the protection of subjects and relationships among subjects (for one, by states) from the secret interference (reflexive blockade, reflexive control and others) by socially destructive groups and organizations.

- 4) Elaborating technologies to “awaken” and support various types of subjects, including the citizens of Russia and the world population at large, and to mature reflexive culture within the strategic subjects.
- 5) Elaborating humanitarian technologies of informatization of society (including the mass media) on the basis of a reflexive approach.
- 6) Carrying out international evaluation (reflexive analysis) of situations, conflicts, documents and others.
- 7) Coordinating international work in the area of reflexive technologies.

Russia’s chances of getting out of “systematic disorganization” depends on the success of establishing a system of strategic subjects: society as a whole, the state, elite groups, communities, citizens. Russia has all prerequisites for launching work in this area. It is crucial to prevent any misbalance in establishing different types of subjects (states, public formations, elite groups, citizens). In the long run, Russia, once it enters the path of shaping a system of strategic subjects, could become the creator of new forms of conscious activity on the planet.

References

1. *Bier A.* Why Do They Hate Us? /Vedomosti, November 5, 2001. P. 4. (In Russian)
2. *Brushlinsky A.V.* Problems of the Psychology of the Subject. M.: Institute of Psychology, Russian Academy of Sciences, 1994. P. 109. (In Russian)
3. *Yemelianov G.V., Lepsky V.E., Streltsov A.A.* Problems of Ensuring Russia’s Informational-Psychological Security // Informational Society. 1999. No. 3. P. 47-51. (In Russian)
4. *Lepsky V.E.* Technocratic Approach Toward Informatization of Society, Source of Threats to Russia’s National Security // II All-Russia Scientific Conference “Russia-21st Century”. M. 1999. P. 143-147. (In Russian)
5. *Lepsky V.E.* Informational-Psychological Security of Election Campaigns – Strategy of Improving the Health of Society / Informational and Psychological Security of Election Campaigns. M. Institute of Psychology, Russian Academy of Sciences. 1999. P. 6-23. (In Russian)
6. *Lepsky V.E.* Reflexive Analysis of Political PR in Russia: Aspect of Building a Civil Society / Reflexive Control. Collected Articles. International Symposium October 17-19, 2000, M. Institute of Psychology Publishers, 2000. P. 169-179. (In Russian)
7. *Lepsky V. E.* Collective Psychotherapist. Awakening Public Reflexion as the Main Task of Russian Intelligentsia / Nezavisimaya Gazeta, November 24, 2000. P. 3. (In Russian)
8. *Lepsky V.E.* Global Informational Society and Russia’s Informational Security: Problem of Establishing Strategic Subjects. Round Table materials (Moscow, Institute of Europe, Russian Academy of Sciences, March 21, 2001). M. IE RAN. P. 96-120. (In Russian)
9. *Lepsky V.E.* Humanitarian Paradigm of Russia’s Foreign Policy in the 21st Century / Russia’s Informational Security and Foreign Policy in the 21st Century. M. Russian Foreign Ministry. 2001. P. 82-88. (In Russian)
10. *Lepsky V.E.* Does Russia Need an Institute of the Human? / Nezavisimaya Gazeta, April 23, 2002. (In Russian)
11. *Lepsky V.E., Stepanov A.M.* Reflexive Control in Totalitarian Sects./ Reflexive Control. Collected Articles. International Symposium. October 17-19, 2000, M. RAN Institute of Psychology Publishers, 2000. P. 51-60. (In Russian)
12. *Lefebvre V. A.* Conflicting Structures. M. Soviet Radio, 1973. (In Russian)

13. Okinawa Charter of Global Informational Society. 2000.
14. Problems of Informational and Psychological Security. (Eds. Brushlinsky A.V. and Lepsky V.E.). M. Institute of Psychology, Russian Academy of Sciences, 1996. (In Russian)
15. *Rubinstein S.L.* Man and the World / Problems of General Psychology. M. Pedagogika, 1976. P. 253-381. (In Russian)
16. *Stepin V.S.* Self-developing Systems and Prospects of Technogenetic Civilization / Synergetic Paradigm. Diversity of Search and Approaches. M. Progress-Traditsiya, 2000. Pp. 12-27.
17. *Lefebvre V.* Algebra of Conscience. Dordrecht/Boston/London.: Kluwer Academic Publ. - 2001.
18. *Parsons T.* Social System. Glencoe, 1952.
19. *Rapoport A.* Reflexion, Modeling, and Ethics / Wheeler, H. (Ed.): The Structure of Human Reflexion. New York: Peter Lang. 1990.



STRATAGEMS OF REFLEXIVE CONTROL IN WESTERN AND ORIENTAL CULTURES

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



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



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

All people know the form through which I prevailed, but nobody knows the form through which I had organised the victory... When there is no form, even a wise man can not pass judgements... The opponent of the one who knows how to attack has no idea of how to defend oneself; the opponent of the one who knows how to defend oneself has no idea of how to attack. It is the finest art!

Xunzi (VI-V B.C.)

The creative research of the stratagemical behaviour and thinking have been developing within two different conceptual traditions in the Western European and Far-Eastern cultures, but in one direction, and by the end of the 20th century the two trends eventually merged. The ancient trend

rooted in the Far-Eastern tradition with the teachings of Lao-tzu, the creator of “Tao Te Ching”, and genius strategist Xunzi (6-5 cen. B.C.), was joined by the European culture’s trend represented by creator of reflexivity theory and reflexive control conception V. Lefebvre and his followers, first of all V. Lepsky and the associates.

Apparently, the time has come to jointly analyse and combine these two merging and complementing traditions. In this essay the authors share the results of their research from the standpoint of interdisciplinary reflexive approach and stratagemical analysis as it was studied by now in China and Japan, Russia, Germany and the USA.

The term “stratagem” in the Western European tradition is coined to the old Greek who used it to describe military trade in general and military deception in particular. Roman commander Sextus Julius Frontinus wrote in the 1st century A.D. extensive “Stratagemata” (plural for “stratagem”) dedicated to dexterous strategies used in armed conflicts.

In the Middle Ages and later the term “stratagem” started to take on a wider meaning. In the famous 17th century best seller “A Pocket Oracle” Spanish Jesuit Baltazar Gracian used the term to describe a trick or a secret and clever scheme to attain status, earn influence and reach own goals in political and social circles. Later, in the Western European culture, English-speaking and Francophone countries started to translate “stratagem” as different intrigues, artifice, ruse, tricks, manipulations in among close and more remote circles of people, etc.

American analysts and Western Europeans became concerned with stratagemical issues in the 20th century when the Western European Civilisation had to meet representatives of Far-Eastern cultural traditions “face to face” on the battle-fields of the imperialistic and economic wars. Military researchers and practitioners, scholars of political sciences and politicians, economists and businessmen, experts in culture and philosophers of the West encountered a strange event, or rather cultural phenomenon of great significance: a subtle but sharpened in course of the centuries system of informational and psychological attack and defence, wearing partners out, incomprehensible, but extremely effective methodology of analysis and planning activities; a motivation, a logic and even an ethical system that escapes clear understanding; what later was tagged the “Japanese mentality”, “Chinese-ness” or “Asian-ness” etc. used mostly derogatory. Despite a thorough analysis of the classic Chinese philosophy and literature as well as the Chinese and Japanese cultures; still, in the down-to-Earth conditions, that is in politics, economy and education, the phenomenon did not become a topic of research.

The situation slightly changed after publishing in 1988 a bestseller by Professor Harro Von Senger. German Chancellor Helmut Kohl welcomed

the work enthusiastically: “Your book contributes greatly to our further understanding of China; moreover, the stratagems so vividly exposed in your work have to do with universal types of behaviour”, - wrote he in his letter to the Swiss sinologist and anthropologist. Being a skilled and far-sighted politician, Mr. Kohl points out the most important:

- as long as we don’t recognise the stratagemical behaviour and thinking of the Far-Eastern tradition we shall be unable to fully realize how such a mighty and expansive civilisation exists and develops;

- the ultimate significance of those features proves that they can and have to become the Far-Eastern contribution to the universal culture.

The work by H. Von Senger was hardly a leading one in studying stratagemical processes and analysis: numerous authors of the Old and New Worlds have worked in this field. However, it was Mr. Von Senger in particular who got the attention of analysts and general public and showed the importance of the stratagemical behaviour and thinking as a systemic and cultural phenomenon.

The pioneer researcher of stratagemical processes, as a characteristic feature of the Far-Eastern cultural tradition, was Acad. N.I. Konrad. In 1950s his translations and especially annotations to old Chinese essays by Xunzi and Woo Tsu [2] in Russia were exemplary in penetration into the strange and extremely complex in its psychological and mental characteristics world of the stratagemical thinking of the Chinese and the neighbouring nations.

In the keystone works on reflexive control by V. Lefebvre [3] and like-minded specialists V. Lepsky and M. Ionov [5] a new methodology and theoretical basis for stratagemical analysis were given. Prof. Lepsky has defined the stratagems mentioned in M. Ionov’s works (“disguising”, “wearing out”) as “a technique of reflexive control”. Stratagemical analysis experts would be right to define, in turn, reflexive control as a principal element of strategic (stratagemical) informational and psychological engagement. There is no contradiction here, since these two disciplines are rather closely related.

The diverse arsenal of the reflexive control techniques, the techniques of planning and initialising a psychological motivation of those influenced alongside with the prevention and countermeasures against the analogous attacks by opponents is thus seen in a different light and its research promises entirely different results. That in particular is the reason for the sheer interest in among psychologists, political analysts, sociologists, entrepreneurs, military and other experts and researchers to the reflexive control, which is now becoming interdisciplinary.

Not so long ago everything was not the same: the works by those scientists received no publicity, were ignored or even – boycotted. V. Lepskiy

mentions that general M. Ionov had to blot out whole sections on reflexive control from his doctor dissertation: the military censorship banned even a harmless euphemism “managing the adversary” (the term in itself was an “Ionov’s stratagem”, a means to by-pass the hard-headed and obscurant publishers). Disbelievers developed their own stratagems to conceal the truth. They would ridicule the chief merits of the founders of the theory and methodology of reflexive approach or accuse their authors of empty theorising and ignoring the psychological mechanisms of the subconscious etc. One gets the impression that those critics have either never read, never understood or never wanted to acknowledge the ideas of the works on the reflexive control.

It would be wrong to think that this opposition and setting obstacles to the stratagemical research were exclusively due to the conservatism of the Russian publishers and the stubborn traditionalism of the Russian academic schools: in the West things are no different.

The source of resistance is hidden deep within the West-European cultural tradition and Christian taboos banning the stratagemical behaviour for every given person. It is enough to note that the instinctive feeling of discomfort, irritation or indignation takes over a typical European once he hears an account of a secret agreement, back-stage talks, conspiracy, etc. or should he occasionally engage in anything of the kind.

Precisely that explains the tradition of the aversion to the stratagem research: works of brilliant Niccolo Machiavelli were in fact thrown into the fires of Inquisition and nazism, while such notorious “stratagemists” as Benito Mussolini, Adolf Hitler and Joseph Stalin swept libraries clean of his books to keep them then in secret storages or just destroyed them. Brother Baltazar Gracian who dared to lift in his works the cover of secrecy over the stratagemical behaviour and thinking of Jesuits was sternly punished by the Fathers of the Order and was deprived of the right to use the paper and the pen. An extensive list of the victims of such repressions in the Western European society grew ever longer but in the 20th century the West came to pay dearly for that. Then in the confrontation with the East the attacks on Pearl Harbour and Singapore designed in accordance with all the rules of the Far-Eastern stratagemical science showed the dangers of disregarding the phenomenon. Now many Western analysts and politicians are misled by means of basic stratagems of Al Quaeda leaders, talibs and mohajeds, are we able to counter it with anything but pure brutal force. The Chinese, the Japanese and the Koreans are rather emotionless about those events, not that they are amoral or indifferent, on the contrary, such news cause quite an interest among them, the thing is their culture nurtures a realistic approach to things, a specific system of political, social and individual attitude.

In a modern Hong Kong edition of "Military Ruse - 36 Stratagems" it is put bluntly: "Talks about philanthropy and kindness may be used to get something from others. One should not let oneself be fooled with them, at least, in a physical or mental combat. As people say, experience is a matter of lifetime's education, and common sense prompts us to use stratagems when communicating with others". As clear and definite as in another statement: "Render unto Caesar the things which be Caesar's, and unto God the things which be God's". It seems that the citizens of Russia and other former socialist countries, who went through a tremendous school of political scam and Pharisaism, corruption and blatant stealing of state property gradually became immune to the vaccines of Christianity that could otherwise cause repulsion to the grim reality and related disillusionment and frustration among them.

In the similar way and parallel with the endless perfecting of Oriental marshal arts of the physical offensive and defence a special art of the informational and psychological offensive and defence has been developing in the region. This art became a sensation of the Far-Eastern culture and found its voice in the global context.

The stratagemical behaviour and thinking as a product of a specific culture is characterised by a particular perception system, reactivity and activity of the culture's representatives, their striving to survive and develop under the conditions when the doer is pressed on the materials, energy, and has little informational and psychological resources at his disposal; he has to exist and act under the pressure of a tough and sometimes uncompromising social and economic competition. "Each man is always in the frontline. A moment's distraction and his property becomes another's booty", - the same Hong Kong source refers to that kind of environment. "Stratagems are like invisible knives within one's mind: they flash only when they are put to use. They are utilised not only by the military, but also by politicians, tradesmen and scientists. He that knows how to apply stratagems can turn a balanced world into a chaos or put a confused world in order, he can summon thunder on a sunny day, turn poverty into richness, contempt into respect and hopeless situation into an advantageous one".

While scholiasts of the Christian civilisation wasted their intellectual resources pondering over abstract theology, ontology, and epistemology, the wise men of the Orient focused on the questions what induces people, what prompts their actions, what mechanisms could be used in order to secretly and effectively control individuals and groups to defend oneself, attack the enemy or reach the stabilisation in the relations of give-and-take.

"Lure the enemy with a gain, drive him away with a damage. He that fights well controls the opponent avoiding the opponent's control... In course of a warfare one has to focus on deception, to act taking gains and

damages into consideration, and putting them to use, to conduct changes by dividing and uniting... When gains and damages are combined, the efforts may prove fruitful... Submission is reached by the damage, obedient service is reached by the business-like relations, aspiration is reached by the profit... He that always has to stay alert has little power, great power is at the disposal of the one who makes the opponent always stay alert... The right warfare and manoeuvring create invincibility... The right warfare and manoeuvring are the reason and the outcome of each other, it is like endless rotation... All people know the form through which I prevailed, but nobody knows the form through which I had organised the victory... The water doesn't have a constant form. He that can depending on the enemy employ changes and transformations is called a deity... The opponent of the one who knows how to attack has no idea of how to defend oneself... The opponent of the one who knows how to defend oneself has no idea of how to attack... If I show to the enemy any form I don't have, then I can remain whole, while the enemy becomes incomplete..." These thoughts by the great strategist of the ancient are provided here to give the reader the idea of the strength of the stratagemical thinking and behaviour in the Oriental tradition.

The dialectic, systematic type of thinking is quite noteworthy: what the ancient Chinese call "form" can be interpreted today as "organisation", "system" with the whole complex of their characteristics: wholeness – dissociation, constancy – inconsistency, balance – unsteadiness, reality – ephemerality, self-organisation – artificiality and need in the resources from the outside, presence – lack of mutual connections, evolutionary advancement – catastrophic development etc.

The two other complementing notions in the Oriental approach to combat analysis – "fullness" and "emptiness" at first sight seem to characterise opposing parties, including the resources of the organised status of their might, psychological disposition, will, awareness, mental strength, quick-wittedness, initiative. A deeper and more general look at the term hints to completeness of the "form", implies its dynamic potential. Here is a very interesting opinion of another strategist, emperor Tai Zong: "I have read all kinds of essays on the military art, and none extends beyond Xunzi". Within the 13 sections of Xunzi's work nothing extends beyond the teaching of fullness and emptiness. Strategist Lee Wei-Gung exclaims: "Who ever can understand what fullness and emptiness are, and that fullness is emptiness and emptiness is fullness?!"

"He that fights well controls the opponent avoiding the opponent's control," – insists Xunzi. "All thousands words and all tens of thousands phrases don't extend beyond this one," – confirms that statement another great strategist Wei Liao Zi. All reviewers agree that the work has to do with

turning own emptiness into fullness and the opponent's fullness into emptiness. In this confrontation all available resources of control are important: "gain", "damage", "fullness", "emptiness", "form", knowledge and skills. One has to learn how to attack and defend with a concept, a plan based on the foresight.

The superior skill is to win without fighting, using the others' resources, principally, .. the adversary's resources! Make him stray from the Path [Path – Dao – central notion in the ancient Chinese philosophy], confuse his set objectives, psychological disposition, strategies, plans, distract and redirect all his activities, and, if possible; undermine his system organisation and ties; force him to be late, to miss.

A still greater level of winning skills was formulated by Tan emperor Tai Zong: "He that can avoid disaster deals with it before it came into being, He that can win prevails over the adversary while he has no form yet" (!). That is, the most effective strategy is to foresee and prevail over an already existent potential antisystem that has not formed yet.

The opposite to such mastery would be a "victory" over one's own ally, who had become an enemy due to some awkward activities of the "victor" (allies' transition into enemies occurs quite often independently whenever objective relations and opposing interests develop), i.e. solving with great difficulty a self-induced problem.

Although more often a conflicting party is in a situation when the opposing systems are already formed, and the resources sufficient for an open confrontation are lacking. Then something most important should be kept in mind; it is most clearly and laconically specified by same Tai Zong: "My adversary and me... by ourselves are two separate elements. But as we engage in offensive or defence, we merge into one. Those who understand that can fight a hundred times and win a hundred times".

So, what do a subject and its opposing antisystem have in common in a conflict? Firstly, it is common and opposing interests. Secondly, since that system is represented by collective or individual subjects, according to the reflexivity theory another supersystem – reflexive system – unites them.

Quite a lot depends on the level of reflexivity of the conceptions and anticipations of the opposing subjects. The main potential advantage of the weaker side in the conflict is that on the initial phases of the conflict (when "form did not come into being") the self-assured stronger side does not pay attention to the interests, abilities, goals, resources, "doctrines", plans, psychological state, mental features, conceptions and anticipations of the potential adversary. Most probably, a stronger side will be indifferent or annoyed should a third party give a warning, as if it were something irritating and inappropriate, – September 11 vividly demonstrated what tragic consequences such conduct may bring.

As it is known [3-5], reflexive relations appear as soon as one of the potential adversaries places himself in an appropriate reflexive position, realises that the relations are those preliminary to the conflict or that they have already entered the conflict stage and tries to model the would-be conceptions, intentions and anticipations of the counteragent. Moreover, by pooling his resources into that direction, the subject does not only get the information on those conceptions, intentions and anticipations, but he also equips his reflexive position with an entire complex of perceptive means that gives a new meaning to things. To put it differently, he starts to perceive and see facts and events in another way.

In the Chinese cultural tradition that special “reflexive vision” is described in one of the short legends by philosopher Leh Zi: “A man misplaced his axe. He thought that his neighbour’s son stole it, and started to watch him: he walks as someone who stole an axe; he talks as someone who stole an axe... But later the men went digging his garden and found his axe. On the next day he looked at the neighbour’s son, but not a single move, or gesture betrayed him as someone who stole an axe”. This extract gives a powerful and precise (unlike us, who prefer using the dull and obscure style of the scholiasts of the Middle Age and the German philosophers, with the exception of Nietzsche) description of the main feature of the “reflexive vision” as it becomes clear when the reflexive positions change.

It is easy to imagine what the owner of the axe would be regarding the “thief” in course of the mock-conflict (it is a conflict, even though the objective ground for its development were absent, still a latent conflict carried on unilaterally): “He, probably, feels that I suspect him, this bastard must know what I think about him!” (The word “feel” reveals the role of the reflexive subconsciousness).

In the polynomial language of V. Lefebvre the reflexive system can be broken down in the following way:

$$\Omega = T + T_y + T_{xy}, \quad (1)$$

where T – the “body”, the objective situation, T_y – the situation as perceived by the axe owner Y , T_{xy} – the assumptions and fantasies of subject Y of how the neighbour’s son feel. Note, that T_x , that should have caused T_{xy} , does not exist, since there is no “situation” for subject X , he simply doesn’t “see” it! Moreover, one can get doubtful whether the “objective situation” is justifiably included in the formula, the only thing that prevents us from resolutely excluding T from the polynomial altogether is the fact that the axe can not be found.

That is how conflicts quicken “out of nothing”, and their cause is nothing but reflexive processes and systems built on prejudicial suspicions. They do not always end happily as in Leh Zi’s story. One can imagine

what would happen if the owner of the axe announced to the whole village that his neighbour's son were a thief.

Let us get back to the reflexive analysis of stratagems. Firstly, let us note that major part of the classical compendium "The Catalogue: 36 Stratagems" includes typological stratagem patterns many of which are based on reflexive control, that is, palming off to the enemy certain conceptions. Those conceptions through the power of given systemic logic may bind the adversary to acting to the benefit of the controller and to the detriment of the subject under control (herein conflict is analysed as an antagonistic game with incomplete, asymmetrical information).

To begin with let us scrutinise the 7th class of the stratagems from the catalogue called "Woo chzhun shen yu" ("From the depths of essence quickens non-essence").

In order to explain this vague phrase that is hard for a westerner to understand (and is quite understandable for an educated Chinese, Japanese, Korean or a Vietnamese) it is necessary to recall the fundamental notion in the Oriental philosophy – Dao (or Tao, Path). Here are some extracts from Tao Te Ching (or Dao De Jing, Treatise on the Path and the Power) [6, 7]: "He that rids himself of base desire can see the secret essences; He that didn't and that reached high being, he can see outcomes (form)... Being (essence) and not-yet-being (non-essence) interdepend in growth; grow out of another, they can produce each other. And hard and easy interdepend in completion... One Dao gives them birth, next De (Power, hidden virtue and glory) fosters them. Matter gives them physical form, get shaped... Great, hidden form has neither shape nor contour; as great here means of Dao, [which is thought up as] hidden and without (overtly sounded) name. Now, Dao backs all things financially; Dao alone skilfully provides for all - it supports all things and advances [some] to perfection... The one who understands Dao seems dull, as Dao which is bright appears to be dark. The one who is advanced (in Dao) seems to slip backwards; the way that goes ahead often looks as if it went back. He that works and moves on the even Dao [co-path] seems to go up and down; the least hilly way often looks as if it went thus, as level Dao appears uneven".

First of all it is important to mention that Dao is not just the Path, it is the natural trajectory of existence, the process in the space and time, the generating source, the seed of the development. Besides, actualisation and realisation of that trajectory or master plan depends on De – a certain power, an organised resource of development, whereas "Only when Dao is lost (sic!) does De arise". The meaning of it is that the initial, natural, formless process of "proto-being" and thus a process beyond understanding ends as soon as the artificial one, De, the process of shaping the formless, starts to interfere: "The man of low De acts from himself, and

very often with an ulterior motive – and is so regarded... So: Only when Dao is lost does De arise”. And thus “He that rids himself of base desire can see the secret essences; He that didn’t and reached high being, he can see outcomes (form)”. To put it in more modern terms, only the one who watches from without, who is in the reflexive position of an “ideal observer” can comprehend the real essence, penetrate into it deeply. The one who is in the position of an active subject is principally unable to do the same: his psyche is carried away with the action and limited within that reflexive position that epitomises specific objections and perceptive mechanisms, and, most importantly, special mechanical blocking of any information that hinders his current activity, and thus is perceived by his psyche as “informational noise”.

As for the strange title of the 7th stratagem “From the depths of Essence (the Formless) quickens Non-essence (the Shape)” it can be interpreted from the point of view of the reflexive teaching and philosophy in the following way: the creative power (De) of the interacting participants of a conflict should work out such forms of influencing the adversary that would force him to perceive unreal forms (phenomena, events, processes, etc.) as real, while making real elements invisible or biased, distorted by the attacking (or defending) party.

As a matter of fact, the Oriental tradition of unity and diversity of the interacting (conflicting or cooperating) parties is complemented with the dialectic understanding of the terms “defence” and “offensive”, as Tai Zong has it: “My adversary and me... by ourselves are two separate elements. If I have luck, he has misfortunes, if he has luck, I have misfortunes (antagonistic type of interaction). Luck and misfortune, success and failure that is were we differ. But as we engage in offensive or defence, we merge into one”.

Strategist Lee Wei-Gung wrote: “Attack is a mechanism of defence, and defence is within the tactics of offensive... If one can not defend while attacking, and can not attack while defending, it means he does not only consider offensive and defence two different things, but he sees them as two different actions. These people can speak with their mouths about Xunzu and Woo Zu as long as they like, but with their minds they don’t understand the philosophers’ deeper wisdom”. For Xunzi wrote: “The opponent of the one who knows how to attack has no idea of how to defend oneself... The opponent of the one who knows how to defend oneself has no idea of how to attack... It is the finest art! There exists no form to describe it. Devine art! There exist no words to express it”.

At this point the authors have to interrupt the essay to inquire our reader most earnestly: are there more potent words written so long ago in the culture of Western Europe – as visionary, as comprehensive, and as

transparent in understanding the dialectics of confrontation? And which contemporary formal system, like algebra of logic, or any other formal scientific language can embody and express through its available means such a profound insight to the phenomenology of the conflict?

Hence, the interdisciplinary analysis of the meaning of the 7th class of stratagems from “The Catalogue: 36 Stratagems” based on the reflexology theory (as a product of West-European culture) allows us to conclude the following:

- “conflicting subjects” in a confrontation constitute a cohesive, indivisible organisation united not only by common and opposing (as far as their direction and goals are concerned) processes of physical interaction, but also by the common reflexive system within which their informational and psychological interaction takes place;
- the conflicting agent’s ability to realise the logic of a potential conflict or the developing one (i.e. foresee the forms that are yet to quicken or those conflicts that came into being, but did not assume any shape yet), as well as the ability to choose the right reflexive position and to be good in using reflexology and analyse reflexive processes of the counteragent determine his chances to succeed;
- the creative power of an active subject should initiate (then “from the depths of essence quickens non-essence”) different forms of influencing the adversary, “forcing” the latter to “see” what doesn’t exist and concealing what exists or making it look different from what it really is, thus giving the opponent the motives to act collinear with the active subject.

The last item reveals very clearly the main mechanism of the 7th stratagem – which is managing the conflict through the reflexive control of the opponent.

Let us concentrate on the 16th class of the stratagems from the Catalogue called “Yuy zin gu zung” (“What needs to be caught should be released first”). In the Chinese tradition of stratagemical research it is often underscored how important it is not to miss the moment when “gain” can be turned to “damage” and on the opposite.

In connection with that Acad. N.I. Konrad wrote in his annotation to the treatise by Xunzi [2] : “Let’s admit you know the notion of “gain” and realise its significance. But what can you get from this knowledge practically? What’s the use controlling people when you don’t know what the essence of the phenomenon, in which the “gain” lies, is? What if you don’t know the very phenomenon, from which you can benefit? And the essence of the phenomenon is “changes”. Because only finding out the mystery of change (and transformation) provides the correct understanding and taking the gain into consideration, and thus it later provides the skills to use

people.” Then, N.I. Konrad quotes Middle-Age strategist Zhang Yuy: “When a clever man ponders finding himself in a favourable situation, he still continues to evaluate possible damages; should he be in an unfavourable situation, he keeps estimating possible gains, meaning: changes and transformations”.

Japanese expert in strategic research Sorai described the phenomenon of “moment”: “Whatever was full turns momentarily empty, and what was empty momentarily turns full. The period of time between the full and the empty is thinner than a hair... There exist no constant fullness and no constant emptiness. Therefore Shi Zi Mei said about it: in a war a moment brings the victory”.

It is dangerous though to passively wait for the right moment for offensive, the timing should be based on your own decision. Therefore in the “offensive by scheme”, “offensive by plan”, “offensive by intellect”, that together compose the gist of the strategic offensive and defence, the stratagems of organisation and managing the “moment” play an important role.

The 16th stratagem tagged with the expression “give in order to take”, “let go in order to get a grip” is, more likely than not, related to the general principle of the marshal arts: “Give in and win!”

Here, too, is the aspect of the reflexive control in a more general interpretation, namely, managing changes and transformations “from emptiness to fullness and from fullness to emptiness” in order to strike the enemy’s defence and offensive systems in the right “moment”, in the moment of transformation. This is, basically, the stratagem of exchange: a visible edge is surrendered for the sake of secretly gaining a greater edge over the enemy.

For instance, the constant retreat of the Russian Army headed by field-marshal Kutuzov left the forces of shrewd Napoleon to a disastrous situation, which ended up in his final defeat, and consequently resulted in his imprisonment and exile to the St. Helen Island. Police often use the stratagem when they release arrested criminals to spot their accomplices and then catch all the gang together with its leaders and perpetrators in a surprise attack. Chess players can sacrifice certain figures, including the queen, to achieve the decisive positional edge, etc.

In all these instances the reflexive control is meant to cause the changes that turn the tables through “sacrifices” (reflexively interpreted by the opponent as “mistakes”, “blunders”, “failures”) that otherwise can in fact be called “let go in order to get a grip” principle, or “give in and win” principle in the language of the Oriental culture of the stratagemical behaviour and thinking.

Most important is to conceal your true objective, and to reflexively analyse your adversary’s thoughts, who can in turn be analysing you, while

hiding your own initial idea from the enemy’s reflexive analysis. If you should fail the opponent can “reverse the stratagem”, and by faking a “blunder”, swallowing the bait as you expect him to do, use your ruse against you. For instance, your opponent can simulate a reckless avant-garde breakthrough away from his main forces while following your retreating troops, wait until your contingent surrounds his small group, and then surround the whole group with overwhelming forces in a “double trap”.

These schemes can be interpreted in the polynomial language of V. Lefebvre:

Scheme 1.

1. Subject X plans situation T where “sacrifice” T_x^π (as seen by X) is offered to subject Y ; subject X tries to foresee the way subject Y would see the sacrifice T_{yx}^π , the subject Y would react to it R_{yx}^π and then realises in the form $T(y)$

2. As the result transformations take place:

$$T_x^\pi \mapsto T(x), T_{yx}^\pi \mapsto T_y(x), R_{yx}^\pi \mapsto R_y(x),$$

which allow us to build the following reflexive polynomial:

$$\begin{aligned} \Omega &= T_{(x)} + T_{y(x)} + R_{y(x)} + (T_{(x)} + T_{y(x)} + R_{y(x)})x = \\ &= T_{(x)} + T_{y(x)} + R_{y(x)} + T_{(x)x} + T_{y(x)x} + R_{y(x)x}, \end{aligned} \tag{2}$$

where $T_{(x)}$ is the situation which occurred as the result of the planning; $T_{y(x)}$ is the situation as seen by subject Y who is under control of subject X ; $R_{y(x)}$ is the decision of subject Y based on $T_{y(x)}$; $T_{y(x)x}$ is $T_{y(x)}$ from subject X ’s point of view. Should all parts of the polynomial accord with the plan ($T_{(x)} = T_{(x)}\phi$; $T_{y(x)} = T_{y(x)}\phi$; $R_{y(x)} = R_{y(x)}\phi$), then the stratagem as a plan of reflexive control by subject X was successful. $T_{y(x)}$ and $R_{y(x)}$ mean that subject Y influenced by subject X does not suspect that he is being controlled (there is no index x to the left of $y(x)$ index string). Therefore the following reflexive polynomial is correct:

$$\begin{aligned} \Omega &= T_{(x)}^\pi + T_{y(x)}^\pi + R_{y(x)}^\pi + (T_{(x)}^\pi + T_{y(x)}^\pi + R_{y(x)}^\pi)x = \\ &= T_{(x)}^\pi + T_{y(x)}^\pi + R_{y(x)}^\pi + T_{x(x)}^\pi + T_{y(x)x}^\pi + R_{y(x)x}^\pi, \end{aligned} \tag{3}$$

where “everything goes according to subject X ’s plan”: the situation of fake sacrifice offer is realised ($T_{(x)}^\pi$), he realises it ($T_{x(x)}^\pi$), subject under control Y accepts the presumption as true and is not suspicious of the controlling subject ($T_{y(x)}^\pi$), works out a “logical” decision ($R_{y(x)}^\pi$) while all of this is perceived by the controlling subject ($T_{y(x)x}^\pi$ and $R_{y(x)x}^\pi$).

Another scheme is possible though if the stratagem of reflexive control fails:

Scheme 2.

$$\Omega = T_{(x)}^\pi + T_{(x)y}^\pi + T_{(x)x}^\pi + T_{y(x)x}^\pi + R_{y(x)x}^\pi + T_{(x)xy}^\pi + T_{y(x)xy}^\pi + R_{y(x)xy}^\pi + R_y, \tag{4}$$

where $T_{(x)y}^\pi$ means that subject Y finds out that the “sacrifice” he sees is

subject X 's fabrication, $T_{(x)x}^\pi$, $T_{y(x)x}^\pi$, $R_{y(x)x}^\pi$ mean that subject X continues to presume that subject Y were unaware of the set-up and goes on according to his plan, $T_{(x)xy}^\pi$, $T_{y(x)xy}^\pi$, and $R_{y(x)xy}^\pi$ mean that subject Y knows about these presumptions of subject X , and R_y^π is a possible decision in the given situation according to subject Y . Interestingly $T_{y(x)x}^\pi$ and $R_{y(x)x}^\pi$ don't have any prototypes, such as $T_{y(x)}^\pi$ and $R_{y(x)}^\pi$. That shows how fragile they are, while all terms with rightmost index have prototypes within the polynomial Ω , which shows that subject Y has a comprehensive view of the real state of affairs.

The analysis of "The Catalogue: 36 Stratagems" demonstrates that almost all stratagems have elements of reflexive control of "turning emptiness into fullness" by influencing the reflexive processes of the adversary: the combined intelligence of the sages, analysts and philosophers of the ancient China anticipated the later studies by the Western researchers.

It would be arrogant though typical for Western tradition in as far as it concerns the Oriental mentality to declare plainly: those great minds born in the environment of the finest technologies of the conflict were nothing but precursors of systematic analysis and the reflexive approach to management. Things are more complicated. And here the authors would like to share with the reader their true intentions in the present work... By uniting the reflexive studies of the West and the East we come to the conclusion: the claim by E. Sapir and B. Whorf [8] that all languages of the civilisations reflect not only the communicative but analytical aspects of their speakers' thinking as well proves to be not just a hypothesis, but an important methodological principle. This is a principle that gives us the chance to penetrate into the riddle and specifics of another means to perceive and define the phenomena of the outer and inner worlds of the people.

Where the European eye catches the systematic direct and reverse ties, qualities and relations – real or visualised in the activities of the involved subjects, the Asian mind would sight above all the breeding, and the developing, it would observe forms in transitions and the transitions themselves. The linguistic means of expression strengthen this conviction: Dao (Path), De (Power), "turning the unmanifested into the manifestation", "fullness and emptiness", "the moment when the transition can be managed", "the means of managing the transition", "turning emptiness into fullness", "turning weakness into power and power into weakness", "turning knowledge into ignorance and ignorance into knowledge", and so on. Very often the following phrases appear: "attack is a mechanism of defence, and defence is within the tactics of offensive", "the unmanifested incorporates the manifestation, and the manifestation incorporates the unmanifested", "each gain contains a loss, each loss contains a gain",

“Luck and misfortune, success and failure that is were we differ. But as we engage in offensive or defence, we merge into one”, etc.

In this connection the authors would like to present to the reader one “wild” idea, something of an “addition to the Sapir-Whorf hypothesis”: written, graphic forms of the language in a great degree determine style and logic of its speakers’ thoughts. Specifically the odd dialectics of the Oriental way of thinking with its “substitutable” symmetry of meanings (as, for instance, in the expression “the unmanifested incorporates the manifestation, and the manifestation incorporates the unmanifested”) is determined by the analytical structure of the ancient Chinese (Wen-Yan), utterly concise, condensed, symbolic, ideographic structure of the hieroglyphic writing. Basically, such expressions look as algebraic symmetrical formulas. Therefore the graphical language dictates the writer (or the thinker!) who uses ancient Chinese to develop the meanings hidden in the pictographic forms using the shape-making rules of symmetry (immanent to this system of shapes), to then create and analyse new linguistic forms that is surprisingly exact in expressing the reality.

Unlike the ideographic ancient Chinese system of writing the European phonetic system of writing that started its history in old Phoenicia is less analytic, more “chaotic”. And that obstructs the ability to perceive the elements of symmetry of the form and the meaning directly in the written text. In this case the activity of the left and right halves of the brain is organised in a different way!

That proves the necessity to pay more attention to studying the Far-Eastern tradition of thinking and applying the mental skills in practice, particularly as far as cultural achievements in the stratagemical behaviour and thinking are concerned.

In this context the analysis of Catalogue: 35 Stratagems from the reflexive control approach can be viewed as the analysis of the principles and methodology of the reflexive control in the Oriental tradition. Such is the natural logic of the relations between the object and the method of the research. The reflexive control isn’t only a way to palm off grounds to the adversary that would lead him to making a decision that is favourable to us and dangerous to him (which is a logical approach) or forcing our own decisions on him (hint), gradually it becomes clear, that the reflexive control is a specific informational and psychological managing of the quickening and transformations of the implications, decisions, intentions, goals, values, ways of thinking and psychological statuses of the adversary. Such control includes the transformation of the enemy’s reflexive positions, reflexive vision and blindness, in other words, it manages of the whole basic reflexive and psychological system of a conflict, in the time when the conflict occurs, grows, stagnates or fades away like a living organ-

ism. The stratagems from the Catalogue testify to that more comprehensive interpretation of the term “reflexive control”. After all, Xunzi said: “I am talking about the changes and transformations and their application in accordance with the enemy’s activity.”

The stratagemical behaviour and thinking, which have appeared deep within the civilisations with such different mentalities, develop and evolve rapidly in the era of informational and psychological technologies. The mystery strings of stratagems envelop countries and continents as they are applied in the fight for material, energy and ideology resources. That potent and powerful mental weapon in the mankind’s never-ending fight for survival and development is on the other side of the good and the evil.

Some 25 centuries ago the founder of the stratagem science, great Xunzi, warned: “Wrath can turn into happiness, anger can turn into humour, but a destructed state will not re-appear, the dead will not resurrect”. Those highly humanistic words spoken so startlingly by a harsh warrior, a passionless sage call us to assume the moral responsibility, it’s a call on all those of us who work out the basics of the stratagem teaching and put the theory to use. Through the centuries that voice calls to master that knowledge in order to protect the mankind and its cultural heritage.

References

1. *H. von Senger. Stratageme.* Der erste Band der berühmten 36 Strategeme der Chinesen - lange als Geheimwissen gehütet, erstmals im Westen vorgestellt. Bern, Scherz, 1988.
2. *Konrad N.I.* Selected Works: Sinology. Moscow, Central Oriental Literature Publishers. 1977. (In Russian)
3. *Lefebvre V.A.* Conflicting Structures (3rd edition). Moscow, Institute of Psychology of the Russian Academy of Sciences. 2000. (In Russian)
4. *Lepsky V.E.* On types of reflexive control (Materials of the 4th All-Union Meeting of the Psychologist Society). Tbilisi, Metsniereba, 1971. P. 371-372. (In Russian)
5. *Ionov M.D.* Psychological aspects of managing the adversary in antagonistic conflicts (reflexive control). Applied Ergonomics. Special issue “Reflexive Processes”, #1, 1994. P. 37-45. (In Russian)
6. *The Ancient Chinese Philosophy: Selected works in two volumes, Vol. 1.* Moscow, Mysl Publishers, 1972. (In Russian)
7. *The Anthology of the Taoism Philosophy.* Moscow, Klyshnikov – Komarov & Co. Publishers, 1994. (In Russian)
8. *Whorf B.L.* Language, Thought and Reality: Selected Writings. Massachusetts Institute of Technology, 1957.

[From the translator: the classic Russian and English translations of certain extracts from Chinese texts quoted in the essay do not quite match. In these instances the Russian texts were given priority.]

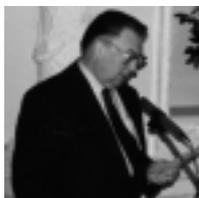
FORMATION PROBLEMS OF REFLEXIVE SUBJECTS

Round Table materials

Host: V.E.Lepsky



The 3rd international symposium "Reflexive processes and control" was held on October 8-10, 2001 in Moscow. The RAS Institute of Psychology (the laboratory of reflexive processes) organized it with the help of the Diplomatic Academy at the Russian Ministry of Foreign Affairs, with scientists from the leading domestic and foreign research centers taking part. At the symposium the problems of making control decisions in the increasingly complicated environment were dealt from the point of contiguous branches of science; the participants discussed the outlook for the intensification of reflexive processes in politics and economics and suggested measures to increase informational safety. The experts continued to handle general methodological issues regarding the further elaboration of the relationship between reflexion and subjectivity as well as the multi-level and absolutely new connection between the phenomena of reflexion and synergetics using mathematical modeling, mathematical psychology and reflexive choice schemes. Special attention was attracted by the Round Table that had in fact expressed in a concentrated way the wide range of issues raised at the symposium. The highlight of the talk was the problem of fighting terrorism, which turned out to be inextricably interwoven with the formation problem of reflexive subjects.



Fokin Yu.T.

*Dean of the Diplomatic Academy
at the Russian Ministry of Foreign Affairs*

The tragic events in the USA and their consequences have awakened the reflexion of the world community and made us think the world is now threatened with new dangers and risks. It is time to search for a new conceptual basis for organizing the life of such a subject as mankind on the planet Earth.

I would like to emphasize the importance of reflexive processes theory for the decision-making in diplomacy.

Our Academy intensifies contacts with the RAS institutes in order to provide a scientific basis for initiatives aimed at solving strategical problems of the development in Russia and establishing goodwill relationships among states. Equally relevant is the jointly studied problem of finding new approaches to examining social systems and their subjective inner worlds, which also makes a subject of reflexive research. While within the boundaries of the natural scientific approach we restrict ourselves to studying the reality, the reflexive approach enables us to explore the whole system of the multiple reflections of this reality, which is characteristic for subjects only. In this case separate people, groups, organizations and whole countries, the whole humankind can act as the subject. That is why it is highly important to gather researchers and practical workers in contiguous branches of science together at one table and discuss the prospects of the reflexive approach in various spheres of social life using it as a basis for framing new concepts of management.



Prangishvili I.V.

RAS Institute of Control Sciences

The process of management gets in fact particularly complicated nowadays, and the application of reflexive approach in administrative work is apparently essential. That is why the institute I am heading establishes closer contacts with other RAS institutes in order to elaborate on this issue. We regularly partici-

participate in joint seminars and in a way serve as an experimental ground for checking the functioning of many aspects of reflexive processes in management.

Lepsky V.E.

RAS Institute of Psychology

Our symposium and this Round Table were conceived about a year before the tragedy of September 11, 2001 in New York, which result-

ed in numerous casualties in the buildings where reflexive processes and reflexive management in the sphere of economics and finance were carried out especially intensely.

Life itself assigns to both the analysts of reflexive processes and practitioners absolutely new tasks which now require not detecting and eliminating dangers but avoiding them by modifying the conditions which cause them. It is such tasks that make the problem of the development of reflexive subjects so vital, and it is only the subjects who are able to make clear-cut and far-reaching decisions in the increasingly complicated situations.

Lefebvre V.A.

The University of California, USA

I would like to add that these are ethical decisions. Of course many moral problems are out of the reach of science. However a scientist's inability to solve moral collisions does not mean that he should not use scientific methods for examining internal reasons of the decision including the ethically determined one.

Brushlinsky A.V.

RAS Institute of Psychology

The issue of reflexive processes breaks down to a number of scientific aspects and therefore belongs to different branches of science. Lately it has obtained a greater relevance due to the real-life demands. It is also a new requirement of modern diplomacy. There hardly is any other professional activity that exhibits such an intricate and therefore strong blending of two psychological phenomena – reflexion and intuition. It explains the increasing interest of diplomats and intercultural communication specialists towards the latest publications in the psychology of thinking and the theory of reflexive processes. Another evidence of it is our Round Table, one of the tasks of which is to shed reflexive light on the tragical events in New York and suggest measures for preventing international terrorism. Also the phenomenon of subjectivity on the level of the whole humankind should be enriched with new tones: the intuition warns that for self-preservation we need a multiaspect study of the reflexive management parameters.

The perpetrators of attacks had back-up plans for any possible conditions and anticipated a noisy public reaction. The bid was at some affective moments characteristic for those who executed it. This places immense responsibility on psychologists who are to discover the whole complex of causes and consequences of the proterroristic behavior examining especially closely the role of the reflexive factor.

New tasks have appeared in the sphere of diplomacy: the demand for quick and yet well-considered joint decisions has increased rapidly, one should learn doing that. As a result there emerges a need for studying hard the ways of making group decisions and avoiding the risks of misunderstanding. A new field of research is being determined – modeling conditions of averting crisis situations. For example strategies of preventing terrorist acts are to be developed.

Needless to say that all this is connected to the exhaustive in-depth studies of reflexive processes. At the last seminar I said that these studies should be based on the intuition and unconscious factors in the subject's activity. I am convinced that their role is significant since thinking is the store of insights and forecasts, which are to contribute to reflexive modeling.

Of course it would not be right to define reflexion only as "calculation" and intuition as a "feeling", the connection between the two is much more

complicated. But in the most general terms this analogy is possible and at this Round Table I would like to warn against underestimating the role of the “feeling” in diplomacy. It is the detector of the dangers’ inconsistency and at the same time a basis for combining various factors when finding out the causes of outstanding events and the estimation of their consequences. From my point of view the “feeling” – intuition and the unconscious – have not attracted so far enough attention in the theory of reflexive processes.

However the remarkable fact that we are now discussing these problems of the international scale in earnest, using contiguous branches of science, evokes optimism.

Rastorguev S.P.

RAS Institute of Psychology

One cannot speak in an abstract way about informational security after the events of September 11, 2001. But today it is evident that it is not only the terrorist attacks themselves that cause fear. It is also the motivation, “methodology” and “ideology” that are frightening. Frightening is the surrounding psychological atmosphere. As well as the one previous to the act that makes it possible and creates a condition to prevent it. The message concerning the terrorist act is a real threat to the well-being and can entail the subject’s further actions. That’s why terrorism can be considered a part of an informational operation, moreover as its “crudest” part. Any terrorism act contains an element of universal informational influence that does not in itself depend on the subject. A priori it can be stated that any subject once realizing the message about danger will respond with an almost predictable result. One does not have to study the enemy since all informational systems which are subject to teaching react to the evident threat in a similar way.

The classical form of a terrorist act is aimed at managing the opponent in order to obtain the desired result and it goes according to the following scheme: preparing conditions for realization of the threat; warning about the threat; realization of the threat in case the requirements have not been met and then return to the initial point. The information age including the trends towards globalization have created new forms of terrorism. I will only mention one of them: the preparations for the terrorist attack are carried out in secrecy; the perpetrators estimate global economic, industrial, financial and other consequences of the attack; under the circumstances of monopolized knowledge about the operations, they buy out stocks, real estate, etc.; so after the act of terror they receive a profit that substantially outweighs the costs of preparing and implementing the attack.

The latter variant seems to be at first sight a usual commercial operation, which became possible under the conditions of globalization, i.e. when the value system is relevant for everyone, when the value of the dollar

is universal. Well, it is a commercial operation, but it's not only that! The success of this operation is based on the ability to forecast future according to the classical formula: "money-event-money". It is the global and homogeneous world that makes it possible to plan the future and to adjust the actions consequently as to get the possible profit. A lot of people try to forecast the future using passive methods such as analysis, analogy, etc. while the international terrorism is an active management of the future, should the attack end with success. And in this case the success depends not on the hundred of enterprises and governments but on the professionalism of a dozen of ordinary perpetrators. All the recent international terrorist acts had the clearly defined economic reasons (what once again proves their indirect connection to the world's globalization trend within the pattern of the so called "civilized" states):

1. The international terrorist act of the USA against Yugoslavia caused the euro to sink in respect to the dollar (this is a case of the classical form of terrorism: threat-warning-realization).

2. The terrorist strike against New York has slackened for some time tourism, paralyzed transportation and made the dollar sink. But in this case beside the purely economic calculations, which are inevitable for an event of such scale, the forecast of the future was further than just one opponent's move. The perpetrators directed the following events to a specific goal. They had not only taken in account but also planned the behavior of the USA after the terrorist act. According to the logic of a great country, "which is superior to the rest of the world", it was impossible to admit that the ordinary citizens armed with paper cutters and pilot certificates had managed to exterminate six thousand people. It would mean to admit absolute incompetence of the state. That's why some Japanese "Red Armies" or Yugoslavian revengers cannot be considered fitting opponent, only states can be appropriate candidates. A lap dog cannot fight an elephant even if we write its name with a capital letter. And that's what the president of the USA almost immediately told the world. The future became as simple as black-and-white for the USA.

September 11 has shown that modern history is not in fact chaotic. It is manageable. Some time ago this conclusion was given scientific grounds by Alexander Zinoviev. It turns out that one does not have to be a superpower to determine history. It is enough to find a way to manage superpowers. And sometimes that is possible even for a group of people with paper cutters and that is now called "international terrorism".

Lepsky V.E.: It is true that the neglect towards informational security is bound to bring the humankind to a catastrophe. That is why the humankind should become the active subject of its

evolution by taking measures against both the psychologically and biologically destructive information and awakening the human's reflexion process to search for new forms of life activity.

Ivatschenko G.V.
Lomonosov MSU

An important moment that has to be fixed in the theory what conditions are objectively safe and what subjectively perceived as as safe. The definition of safety as protection from a range of dangers expresses these ideas.

Understanding this, some researchers state quite logically that when making fetishes out of the dangers and emphasizing them we become their hostage. The description of the events with the terms “danger”, “challenge”, “safety” is in itself psychological, a feeling expressed in a form of an emotional evaluation, the subject's perception of the circumstances in which he lives and acts. A certain fear of the reality lies at the core of the perception. Nothing can be opposed rationally the perception or the feeling expressed in the form of these “feelings-evaluations”: the subject perceives the situation in this particular way – and that's it. Moreover the same conditions can be perceived by different subjects in different ways: one would see them as danger, menace, challenge, while the others – as absence of all these or protection against them.

To the extent that in reality safety is a condition for the subject's existence that is under his control, providing security is the process of creating (obtaining, finding) such conditions under which his interests would be realized and his goals reached; the final goals of these conditions are moral values or, according to professor V.Levyfre, values connected to the nature of human morality. In other words providing security is a process of the subject's affecting the necessary conditions of his existence. This means that security is a condition under which the subjects at least preserve and reproduce their values.

Kostin A.V.
Moscow, Military University

I would like to share my view on the military aspect of the security. Military policy of a state includes: a range of ideas and principles; military and political decisions and plans; military and political activities.

The logic of the military-political conflicts at the end of the twentieth century was such that despite the most modern military equipment and arms, the victory is to a large extent determined by informational technologies and mass media. The evidence is the “outcomes” of the American war in Vietnam, military actions of the Soviet army in Afghanistan, the Russian military presence in Chechnya, NATO's war in Yugoslavia. At the same time the military and political representatives have long since been

using a directed informational influence of one subject of the military and political activity on the other. Directed information can be defined in this case as trustworthy facts together with elements of misinformation. On the whole they are meant to make the opponent at whom they are aimed to act in a certain way. Of course this type of information should meet the requirements of precision, secrecy, relevance, concreteness and be presented in due time. If our information is a basis for the opponent's managerial (including the military and political) decisions than it has to be based on the reflexive management. Moreover it gives access to all the necessary information about the opponent's intentions which is especially important for forecasting military and political activities.

As wars and military conflicts of the last decade have shown not only the subjects of the military and political activity become objects of the directed information but the population of the states at war as well. It ensures informational dominance in the main spheres of the state: economic, political, psychological, religious, scientific, productive, military ones, among different nationalities within the state and on the international arena. Thus one element of NATO's military strategy is carrying out psychological operations for influencing public opinion, pressing the government of the outcast-countries and winning moral and psychological support of their interests in the possible military actions against them.

In course of studying psychological aspects of the "information war" in the West methods of controlling the perception of a person and society in general are being developed. Special attention is paid to modeling conscience and thinking activity, the methods of suggestive-logical (suggestion from a distance – without words and without hypnosis) and semantical influence.



Anisimov O.S.

*Civil Service Academy at the Office of the President
of the Russian Federation*

It is evident that the humankind as a strategical subject needs new strategies of self-definition which in its content deal with the "movement" into the world of global activity spread in the universe. And here the importance of a certain credo comes into effect: one

cannot ignore or oppose the universe without being punished for that. The humankind and the human being can create worlds, influence parts of the universe. But in case of dominating or even making the priority out of the egocentrism the reaction of the universe is expressed in catastrophes and the danger of self-destruction of the humankind. Modern strategies developed on a national level and considered to be applicable globally

are as a rule egocentric. An example of this is the intention to split and force Russia out of the global players. While within Russia this approach has been reversed, western players kept it using it openly or secretly, creating temporary destructive situations and disregarding any efforts by the new Russian government. We should consider all aspects of self-definition strategies and find out the shortcomings caused by naive egocentrism of national elites, their narrow self-definition, and psychological limitations.

First of all this is relevant for the work forms of strategical consultants who as a rule ignore both the national experience of cultural thinking patterns and the specifics of the ethno-psychological conditions of this or that people.

Chkuaseli V.O.

Institute of Procrisis Research

The very first steps of the evolution of humankind as a whole and Russia in particular as strategic subjects show that when there are not any definite plans for the future, behavior principles in the present and ideals, than they – as a single person – are in the state of thoughtlessness. In this case world view and attitude that define life principles and programs of constructive behavior get replaced with unpredictable fits and actions.

That is why it is important to find using the information and weighing everything psychologically the optimal structure for Russia taking its specifics as well as its universal features into account. In Russia there has always been prevalent the idea of a spiritual society with a “sensitive” ethics, with national self-conscience sticking to the traditions of the synthetic “Russian soul”.

A motivation for a civil society is currently being imposed. But how is this idea connected to the phenomenon of togetherness – if the last one is understood as a form of the Christian lifestyle in Russia. Unfortunately the importance of this “united psychology” has not been appreciated to its full extent. And maybe we could fit this psychology to the whole humankind with substantial modification, of course. Shall we conceive a project of a “spiritual noosphere”? The events in New York make us think about it really hard.

Lepsky V.E.:

The question is a very serious one. But I would like to go back to more down-to-earth issues. In particular let us discuss the new and in the first line reflexive aspects of strategic management.

Kara-Murza S.G.

Russian Research Institute of Economics, Politics and Law in the Scientific-Technical Sphere of the Ministry of Industry, Science and Technologies of the Russian Federation

In a crisis when the dynamics of all processes undergoes drastic changes and there appear interruptions in the continuity, the reflexive aspect of management becomes of the key importance. The delay in analyzing previous conditions and decisions often becomes fatal since the system goes through the point of irrevocability and the process of the bad trajectory becomes irreversible.

After 1992 all instruments of control in Russia were destroyed or deteriorated. For example the management has lost the “system memory” which makes reflexion possible. Another concrete example is the loss of medium-run and short-run historical memory both by the political elite and by the population. Technically it is shown, for instance, in destruction of the simplest control instruments of reflexion (reports, figures, etc.), deterioration of the stores of material memory keepers (archives and libraries), inaccessibility to the simplest statistics. Restoring even these basic conditions for full-scale reflexive control is a complicated and essential task.

The reasons for such profound destruction of the managerial subsystem are fundamental and interact synergistically with each other. It is the combination of political and worldview factors that were characteristic for the regime of the transitional period after 1992 (to be more exact after 1988 in the USSR). This regime emerged, was valid and preserved when the society entered the transition from “order” to “chaos”, when the mechanisms of reflexive control were undermined and the “reflexive culture” itself was destroyed. One of the evident results of this influence upon the administrative system was the striking change in the personnel thinking domineered by autism and hypnotizing. Autism in this case can be defined as a tendency to exclude out of the models used for making decisions all “unsuitable” factors. For example, a substantial economic growth is expected with a simultaneous halt in oil and gas production, external debt growth and plans of a sharp increase in oil exports.

Hypnotizing is attributing importance to purely formal, ideologically secondary characteristics and relationships. For example avoiding the totalitarian regime (as elements of planning) is considered to be more important than securing the country’s survival.

The situation is worsened by secondary factors. Firstly, the object under control has changed drastically so that the reflexive aspect needs a new system of concepts and even measures, however due to a long period of suppressing reflexivity administrators failed to master new instruments of control. Secondly, goal functions have been changed at the highest levels of management sharply (and often secretly) what should entail reconsider-

ation of the whole system of limitations. But this has not happened, the destructive forces which had not played an important role before got “unbounded” under circumstances concerned. Thirdly, even fundamental processes became absolutely non-linear and take a course of breaks and changes, while the management assumes the models are familiar linear ones.

The deterioration of reflexive management has coincided with the country’s threshold state in its industrial development in the density of technogenic factors has reached the critical level after which the elements of the technical sphere can be relatively easy turned into the means of destruction. An inversion of the relationship “costs-relationships” in the access towards new means of massive destruction has taken place, while the mentality of the manager has stayed the same. One cannot escape the perturbing conclusion: managerial system in Russia is such that it awakens and activates latent dangers and makes potentially lethal even those of them which can be controlled with minimum costs.



Raikov A.N.

Analytical Agency “New Strategies”

I would like to represent the ideas developed together with V.E.Lepsky concerning strategical management. This is management in the most concentrated form when the goals are clearly defined, the ways of achieving them are formulated and an implementation mechanism is created. The goals may have a complex multilevel structure – they may be far-fetched and difficult to achieve or concrete, quantitative ones. And the mechanism includes both psychological-motivational elements and informational-technological ones. Strategical management has a reflexive character since most often it is used to understand the present day as if looking at it from the hypothetical future. Reflexion helps to evaluate the current day from tomorrow’s point of view. It helps the management and the employees of the organization (authority, company, etc.) to see themselves today in the mirror of tomorrow. Planning and forecasting the future is in itself a temporary and hardly effective procedure. But when used efficiently it is an excellent means for solving current problems.

The processes of taking strategical decisions employ both rational (normative) and subjective (subconscious, latent) elements and motives what A.V.Brushlinsky has mentioned in his speech. What shall prevail depends on the situation.

Normative elements are more examined by cybernetic specialists, mathematicians, linguists, specialists on intellectual informational technolo-

gies, semiotics, hermeneutics, and catastrophe theory – all those who try to verbalize the process, present it visually, find and apply formalized cognitive rules. They use the whole range of means and methods for instance analysis of regression, solution of incorrect problems in fuzzy spaces, etc.

People cannot always express their opinion, sometimes they hide or misunderstand something. That is why reflexive psychologists and psychoanalysts are those who study subconscious motives behind strategic managerial decisions. Their task is to arrange the group work in such a way that its result would be a natural outcome of the whole team's work and that each employee would be motivated for achieving this result.

Kniazeva E.N.

Moscow, RAS Institute of Philosophy

Kurdiumov S.P.

Moscow, M. V. Keldish Institute of Applied Mathematics, RAS

Reflexive management should most probably take into account the nature of complicated non-linear systems and in fact be an art of soft management, because:

1) The future is open and unpredictable but not random. There are specters of future conditions, attractor-structures. The soft lines of possible future determine methods of special soft management.

2) Soft management is exerting “clever” and necessary influences. Weak but adequate, the so called resonance influences are very efficient. They should correspond to the internal tendencies of the development within the complicated system. The art of soft management is based on the means of self-management and self-control. The main problem is how to control without controlling, how to direct the system by a small resonance influence to one of the subject's own favorable ways of development, how to provide management that would control and support itself.

3) Some human actions are bound to be a failure, they do not lead to success, since they are not adjusted to the internal tendencies of the complicated system development. Possible changes of the system's characteristics may lead to transforming the range of attractor-structures, its evolution, and a variety of possible ways in the future.

4) A certain topology of influence is required: the managerial influence should be organized correctly not only as far as power is concerned but also topologically. It is the topological configuration, the symmetrical architecture of the influence that is important, not its intensity. Resonance influence is an influence that is spread in space. It is an injection of the environment in certain places and in due time.

5) Synergetics shows the possibility to save time and efforts and generate via resonance influence the needed and – what is equally important – realizable structures in a complex system.



Malinetsky G.G.

M.V. Keldish Institute of Applied Mathematics, RAS

The revival of interest towards reflexive processes is taking place nowadays. First of all this is connected with the new technologies of manipulating mass audience, crises in the socio-psychological sphere, the transition from hi-tech to hi-hume. One can say that the specific weight of “virtual reality” in the mass and individual consciousness is on the rise. The space of meaning, values, and expectations becomes a new arena for the fight of the political players. The main dangers and the main hopes of the coming century lie within this space.

An illusion is spread in the minds of most reflexion scholars that mathematical formalization of these ideas are almost exclusively connected with the logical-probable models built by Vladimir Lefevre, with the “algebra of conscience”. On my part I would like to draw your attention to a range of new issues the appearance of which is combined with reflexive management problems, and to a mathematical mechanism that could be efficiently used in this case. With its help we will be able to evaluate the optimal memory depth and the number of those standard examples, which would be sensible to use in order to build a strategy in the environment undergoing constant changes. This approach is connected with direct application of synergetics, the concepts of order parameters, statistical and dynamic description to the choice situation, in which a society finds itself. We can pay attention to the models of polarizing public opinion, discussed by G.Haken, and to the ideas of “psychological synergetics”, developed by V.J.Krylov.

The situation is similar to reduction in quantum mechanics. If up to a particular moment we have to do with probabilities then after the observation some of the variables are measured precisely and this in itself executes and impact upon the further development of the system. The theories of river-beds and jokers are also being developed at the Institute of applied mathematics. Within their boundaries it is possible to look at the same time at evolutionary regular periods of development and at the turning points and crisis moments. In regular periods it would be natural to act in the following way: to analyze the possible external situations and the most sensible ways of reacting to a crisis, i.e. to fulfill the job that should be carried out by the headquarters meaning an armed conflict. The need for establishing a similar authority for managing natural and technical catastrophes and calamities, social insecurities has long since been proven by the Ministry for emergency situations and the Presidium of RAS and without any results as yet. From the conceptual and methodical point of view the success of this authority depends on the development and usage

of the reflexive processes theory. This is especially clear nowadays when a handful of people can drastically change the whole course of history, the possible set of strategies and the range of most important dangers.

Synergetics and non-linear dynamics can from my point of view play not only the role of the supplier of the system and formulas (“the mathematical mill”) but first of all the role of the interpreter, the connecting chain part between the theory of reflexivity and a lot of other branches.

Taran T.A.

Kiev, The National Technical University of the Ukraine “KPI”

When a reflexive management is taking place a subject complies with external influence irrelevant to his own wishes.

The self-overestimation plays in this case a significant role. It appears when the subject’s expectations outweigh his or her wishes – trustfulness contributes to the success of the reflexive management. The higher the subject’s expectations in comparison with the environment are, the less freedom of choice he has, the more vulnerable to external influences he or her is. At the same time false self-estimation of the subject as the “fighter” with the environment also leads to the readiness to comply with the influences of the environment. Creation of “normative images” is yet another way to successful reflexive management. People who underestimate themselves are predisposed towards the normative behavior.

Aspiration to the higher ethical norms leads to the perfection of a personality and makes the process of controlling the subject harder. However if a subject manages to impose the norms different from the common ones (for example in totalitarian systems), then the subjects with underestimation would be more vulnerable to external influences – the aspiration towards normative behavior would lead to the choice which would have the highest mark on the given scale grade.



Smolian G.L.

The Institute of System Analysis, RAS

The logic of reflexive management was first described in the middle 60s. Reflexion was viewed then as the understanding of the content of one’s own activity and the activity of others. As far as a conflict is concerned this function of

mutual reflection of the plans and the actions of the opponent was represented in the extensive form which would fix the main variables of the decision-making process which only the conflicting parties could manipulate. Such variables that are reflected on the “screen of conscience” and that participate in the imitation of a discourse contained the situation (“tablet”), goal, and the way of solving (“doctrine”). In other words, reflex-

ive management is using the subject's capabilities "to construct consciously the images of self and others" (V.Lefebvre).

The implementation of an extensive reflexion form meant a possibility to influence not only the mentioned general variables but other components of the decision making process as well: the optimization criteria and the alternative solutions, the sources of information about the situation and the opponent, risk estimation and even the analytical capabilities of the subject, the possibilities of his training, his environment, etc.

Thirty years later V.Lefebvre and his American colleagues began studying other automatic forms of reflexion: subconscious generation of the image of the self and images of others. This process which can be distinguished from the conscious understanding of others and self, was called quick reflexion. It can produce behavior according to the scheme, the rules known to the subject or according to the habit. The habit is a more or less self-maintaining inclination or tendency to following a given or acquired behavior pattern. If the rules are understood by the subject most of the times consciously and the following of these rules is intentional then habits are compulsory, they are based at the subconscious level. But rules and habits lead to the same conclusion: under X circumstances a Y action is carried out. The nature of schematical behavior consists in the automatic (unconscious) fixation and securing of the result of the action, that when repeated should lead to success. The behavioral scheme is started by the constant (invariant) properties of a conflict situation learnt by the subject's experience. Consciously introducing such a property we can easily provoke the schematic behavior (according to the rule or a habit).

In chess standard or typical moves can be the cause of failure. Quite often the opponent himself provokes such moves.

One of the ways to study the processes of reflexive management that are based on the quick reaction function is finding out the characteristics of the situation which provoke the behavior in accordance with the scheme, rules and habits. The research in this case can be absolutely diversified and complicated. It is not difficult to construct an experimental situation for example the spreading of credible rumors like a newspaper trick about the possible ban of dollar circulation in Russia in order to provoke particular citizens' actions (in the constant conflict citizens – power). However here the problem of moral justification of such actions arises.

In a real conflict the reflexive management is based on both forms of reflexion. It would be interesting to study the interaction between the extensive and quick reflexion, finding out the conditions under which they can transform from one into the other.

**Maksimov V.I.***RAS Institute of Control Sciences*

As a result of the system analysis of problems, which was carried out together with Z.K.Avdeeva, we have found out the “typical structures” – the cognitive models of such control in a condensed form (cognitypes). They define the horizons of the problem situation reflexions what influence the success of managing their solutions. If there is a stock of cognitypes that can be attributed to real life situations then the possibility to evaluate the internal and external conditions and a good decision are easier to find.

The view of problems and their solutions is developed by people on their own as well as under the influence of other people, ideas, norms, traditions and experience formulated at different times. The person who makes or prevents the society from seeing certain problems, controls it. The interests of different political powers and their views on what is most favorable turn of events are not the same. That is why particular circles form their own ideas of what is happening and what should happen – and in this way influence the situation through spreading this image and directing the public perception of problematic situations. In this case these circles take the current public cognitive patterns into account in the way that is favorable for them. For example one can forecast strategical and tactical plans of the military if one knows the schemes of developing military actions that had been taught to them at the military schools.

Common and widely accepted cognitive patterns make the subjects of control vulnerable, with their rivals knowing how they work. We tend to trust people who are considered to be professionals or we seek the proof of our decision among the majority of those who surround us, i.e. we change the subjective world picture using common cognitypes.

Thus the goal of the reflexive solution of a problem situation is that the aspired condition of the social state should reflect the will of the subject managing the whole system and meet the society's expectations.

Lepsky V.E.: Having discussed reflexive aspects of control problems I suggest dealing with the role of reflexive processes in politics and I would like to give the floor first of all to our guests from abroad and the CIS countries.

Birstein B.I.

*Doctor of philosophy and economics,
Canada*

Borshevich V.I.

*Kishinev Municipal University,
Moldova*

The outburst of ethnic tensions in multiethnic and multicultural states and regions – in Israel (the Palestine problem), in Macedonia (the problem of the Albanic minority), in Moldova (the Pridnestrovye problem), in Russia (events in Chechnya), in Azerbaijan (the Karabakh issue), in India (Kashmir), in Ceylon (Tamil tigers) – makes the authorities, politicians, diplomats, representative of international organizations face the phenomena which have traditionally belonged to the area of research of ethnic psychologists, sociopsychologists, conflict researchers and representatives of other scientific branches who are in this of that way connected to studying individual and collective subjects. It would not be an exaggeration to say that the fall of such states as the USSR and Yugoslavia was to a large extent predetermined by the simple ethnosocial and ethno psychological illiteracy of the ruling elites, their direct assistants and especially (however hard it is to mention this) of the mass media.

Life has shown that such concepts as “intergroup difference”, “mono-ethnic identity” or “ethnic status” aren’t only a playing ground for learned analytics and theory-makers. They directly affect lives of those who would otherwise consider the nations too sophisticated and irrelevant. Pogroms, bombings, ethnic cleansing of civilian population, crowds of fugitives, destruction of world cultural monuments is a price too high for the indifference, subsidy cuts and irresponsible attitude towards the research works in the science on ethnicity.

The reflexive approach to the analysis of human behavior and thinking is a powerful conceptual and methodological instrument of understanding and regulating ethnosocial processes. The undeserved neglect hardly contribute to a better development of the theoretical and practical basis for early diagnostics, monitoring and control of social and political phenomena and conflicts.

Bondarovskaya V., Sazonova T.

*Ukraine, Kiev, International
Humanitarian Center “Rozrada”*

Our analysis of the preelection situation in 2002 in the context of mass political conscience awakening showed that the times of superficial election campaigns in which the real mentality of an average voter was not taken into account are passing by. This can be also proven by the results of the following opinion polls. For example to the question “What is in your view the main national interest of the Ukraine?” 41 % answered that it is the establishment of a law-abiding democratic state, while the questions “Is it possible to force you into voting for a politician or political party that you do not want to vote for?” 63% answered “No, no way” (according to the newspaper “Den”).

We have distinguished the following characteristics of reflexive processes in the mass political opinion before elections:

1. Since negative information was considered in the transition period to be more trustworthy and important, the society has formed a quick reaction to it; it evokes support in the consciousness an average citizen, it can be remembered easier and it gets associated with the past experience
2. The positive side is associated in the public opinion with the utopian and unattainable dream and sometimes with a lie; there is one more mechanism, which is the separation of positive propaganda from the population's opinion.
3. An extremely high interest towards more global issues in comparison to one's own personal needs and interests has been noticed. The factor of foreign policy importance in the Ukraine (West, Russia, NATO orientation) were more important – 24.4%, while the factors that have to do with the life and interests of the citizens were less important (interests of every person, every family) – 2%.
4. “Reflexive swings” have been discovered when on one side there is the public opinion of the country and reflexive reaction responds to the created incentives, and on the other side are the country's leaders who create their political programs.

In general “negative reflexion” is dominating the Ukrainian society; the reaction to negative news is the following “I believe it because it is scary and it hurts, because it has already happened to me, my parents, fathers, my country, people and so it can be repeated”; “positive reflexion” is nowadays in a more passive state.

Lepsky V.E.: Reflexive processes play an extremely important role in today's politics. It is that. Once again they emphasize the importance of studying economic psychology which is more actively introduced into managerial studies.



Zhuravlev A.L.
Moscow, RAS Institute of Psychology

The potential of the reflexive approach is not employed to its full extent, including the studies of the subject of the economy – individuals and groups. This is right and at least three characteristics of such a subject are as follows: a) interconnection and interdependence of individuals in a group (the basic quality of compatibility); b) the ability of a group to show various forms of joint activities; c) the ability of the group for self-reflexion. Unlike the first two qualities self-reflection is not studied

well enough and so it is less well known. Now we can distinguish between several functions of self-reflexion. First of all this is the formation of the “we”-feeling in a group, i.e. a feeling of being part of a group, the union (the process of unification with their group). It is well known that this feeling emerges not immediately but gradually in the process of the individual becoming member of the group, one of the mechanisms of which is group self-reflexion. Secondly, this is the formation of group social ideas about it, its cognitive evaluations, opinions, etc. which also require some time. Thirdly, the group self-reflexion encourages each group member to participate in different kinds of joint activities on the whole and what is most important in the organization of the joint activity in particular. Fourthly, group self-reflexion helps group members to understand exhaustively the social environment and in particular to adjust to it in a more appropriate way. This quality is also backed by the capability of a personality developed by group self-reflexion to evaluate his own and other groups more adequately and to compare them better.

Tyagunov A.A.

Tver State Technical University

Analysis of the economic behavior of the Russian in the time of social and economic reforms has shown that the current neglect of subjective approaches in managing investment programs and purely subjective schemes do not correspond any more to the socio-economic reality. According to the objective approach this behavior of the population should meet the conditions of the extremely rational person model, which as a subject of the investment market acts in accordance with the supply-demand curves.

The subjective reflexive approach aims at solving psychological and social problems within the limits of economic innovations and requires taking into account the forecast of investment behavior, and such specifics traits of Russian mentality as the transition from extreme trustfulness to ultimate distrust.

In general reflexive support and control when introducing investment programs allows creating real preconditions of humanizing business activity, forecasting social conflicts and in this way solving the questions of economic security.

Evstifeeva E.A.

Tver State Technical University

Today one of the dangers to economic security is the slowdown of economic activity. The growth of investments is, as it is well known, connected to the level of trust towards the authorities (government, state and other institutional subjects). In economic practice the ranging of the social and economic system is carried out with the help of the trust index which implies the level of the institutional environment security. Investors' trust also depends on abid-

ing of the laws by the government or any other institute of power. Economic behavior in the sense of the trust mechanism is seen as a trust statement, evaluating oneself and the Other, appreciating oneself and the Other, taking the relevance, security and trustworthiness of the Other into account. In this case we mean not incurring injuries or doing harm to each other as a result of trusting each other. The harm is understood as moral, material, emotional and existantional one. Trust is always Faith in the Other. The ability of the Other to believe means self-trust and self-belief. The attitude towards the other as to one's own self guarantees security and promotes a dialogue including the professional one. The understanding that trust is a cultural phenomenon should be reflected in economic relationships as well.

Pozniakov V.P.*RAS Institute of Psychology*

Within the entrepreneur environment the self-reflexion of belonging to a group includes on the one hand the characteristics which allow to provide a positive group identity ("entrepreneurs are the leading force of the modern society; they are those who work hard, create new jobs, satisfy people's needs for goods and services"). Entrepreneurs clearly identify their socio-psychological specific features such as energy, activeness, self-reliance, independence and responsibility, self-consciousness. At the same time intergroup relationship in the business environment are characterized by a low level of mutual trust and mutual help: within this social unit everyone fights on his own.

The psychological likeness of business representatives is connected to the fixation of the disintegration in their relationships. And often a crisis of social identity appears in this case: having the status of an entrepreneur and proprietor the person psychologically cannot accept and share the values and norms of this social group, he does not feel "at home" within it.

The basis of the entrepreneurs' reflexion of their group identity is on the one hand the socio-economic belonging (status of a proprietor of the means of production, economic freedom and responsibility, work to support oneself) and on the other hand – the understanding of psychological similarities with the representatives of "his" group and differences from the representatives of "other" groups.

Reut D.V.*Moscow, "Kreon" Net Holding*

Due to the increase of information in the society there have been drastic changes in the importance relationship of the internal personality structure and the organization structure that includes this personality. The personality begins to depend less and less on external organizations. Mass media space becomes the basis of infrastructure through which a personality gets access to resources for carrying out a wider range of one's own ideas. As a result the

structure of the spring-board gets changed which is used by a personality when analyzing reflexively the environment. Via information the human-kind has found itself on the way towards the post-organizational society. On the way to it the sense, volume and meaning of the category MANAGEMENT itself gets changed. In a developed post-organizational society the management loses its previous sense of the play against one team, it is replaced with mutual coordination.

Lepsky V.E.: ... And it requires intensive reflexive work from a person. When the person is given a multiple choice, very often this demonstration turns into control of individual behavior. Some mass media are successfully using it.



Matveeva L.V.
Lomonosov MSU

Unfortunately you are right. Under the influence of TV information irreversible changes are taking place in how a person perceiving the world. The accents of important and non-important information get mixed.

Television companies introduce a new measure to the human world picture – the majority’s opinion – by constructing and modifying social reality and creating daily and rhythmically virtual phenomena. People in general cannot reflect this component of the collective conscience and they begin to take the opinion of the majority into account in their daily lives.

Hereinafter one of the serious problems is to realize and regulate socially new psychological realities which have appeared as a result of the quick development of informational and computer technologies. One can distinguish among three types of them: a) activity of virtual magicians conceiving informational “poison”, i.e. computer viruses which can influence not only the informational product but also its consumer; b) activity of hackers – “pirates” of the informational space; c) high claims of mediators of information – anchor people, commentators, “politicians-TV stars” for whom the meaning of their existence is manifestation of themselves in the virtual reality and declaration of certain patterns of ideas, relationships and set ups (a good example would be the existence of such virtual spin-doctors as S.Dorenko and E.Kiselev).

That is why the description of the virtual reality specifics and of its interaction with the collective and individual mind of society members is especially relevant. According to its origin this reality is the result of human creative activity and in order to be supported it requires creative energy from the intellectual elite of a society. At the same time it can be characterized as active, expansive and techno psychological. The conse-

Round Table: Formation Problems of Reflexive Subjects

quences of the interaction between the active informational environment and society will depend on the level of realizing and forecasting those processes which can happen as a result of this interaction.

The new mass audience can be characterized first of all by its tolerance to

Pronina E.E.
Lomonosov MSU

indefiniteness, antinomy of mind (the ability to unite opposite points of view), destruction of global perception and finally internal heterogeneity. This is not anymore the consuming but rather the self-reflecting audience which realizes its interests, values and priorities and is able to distinguish the bias and distortion of the informational impact. The value of information becomes more and more evident independent of evaluations and comments that accompany it.

The variety of opinions is not a value in itself for the modern audience but rather one of the main conditions of providing the necessary amount of information and its wide range. Unfortunately the positions of various mass media only appear to be different. The information they give is “one leak of information for all” what is obviously insufficient. For example up until now it stays unclear what is happening to Russian Energy Monopoly, what the educational reform is going to be like, etc. The problem is there are far too many similar publications which belong to the same owner and lobby. Informational monopoly is the main danger of the informational transparency and security of the audience. The level of reflexion achieved reflects first of all the evolution of mass media audience, its change from the object under influence into the main and leading subject. The mass media system itself should become self-organizing like Internet managed by numerous activities of individual users.

IT is true that there appears a striking difference between the “informa-



Lubashevskaja J.Y.
Moscow, NIPT Russian School of PR

tional elite” which forms social and individual attitudes and the main population mass including the well-off and educated one which does not however have an access to informational technologies. The violation of democracy is to be seen in this fact. It turns out to be enough to influence the elite to form the mind of the whole society. Directed PR efforts change the attitude of the elite and as the result it is quite different from the mind of the society. In this case the elite gets parted from the society and loses the efficiency of influence. This kind of society is doomed to recession and destruction. Or to a revolution. What is the current informational security or informational arms in Russia? One can agree that both the informational shield and sword of the country are

broken. PR which replaced propaganda on the information market is as it is usual in democratic countries only starts to develop. There are not any signs of improvement in this sphere.

Luckily no one wages a serious direct, no-nonsense information war against Russia. All the troubles come from us, we choose our positions ourselves – Yeltsyn has not been sent to us from the USA.

Can Russia wage a serious information war or carry out a serious information defense? If we do not take the technical side into account then the answer is positive. Our strength is in the humanitarian culture, in national historic traditions, in the intellectual wealth including the authors of many books on the different aspects of information wars.



Petrovsky V.A.

Russian Academy of Education

I think our Round Table has found out the importance of the following circumstances:

1. There are many participants of the reflexive movement who do not reflect themselves as ones.
2. There are also some who are involved in a kind of “movement” and reflect themselves as reflexive movement participants although they are apparently not.
3. It would be a good idea if the former would eventually realize that they belong to this movement and the latter ones would do something to actually become the movement’s true participants.



Lepsky V.E.:

This Round Table has demonstrated huge demand for operational knowledge in the sphere of reflexive processes. It becomes more relevant in tough crisis situations which present a danger to human existence as the whole. And we should not only find out the causes of what has already happened but also find instrument to counter future dangers and exterminating their roots. It is this idea that in a way unites our Round Table.

The main “medicine” against current and future problems should be the realization of the key fact of the individual development by the human-kind, constructively oriented social groups and individuals. One of the ways to solve this problem is to increase the speed of teaching reflexive processes, develop reflexive capabilities, which according to their definition have self-stopping antidestructive mechanisms of cognitive and affective types. The mind should not only consider the conditions of its exist-

ence but also of preserving life on Earth acquiring a new ontological dimension of a higher order. So the effective strategy of solving problems nowadays is worshipping the life. I would like to share some ideas on the need to look for and create new forms of organizational work in the field of reflexive research.

Lately, thanks to the initiative of the Reflexive processes laboratory at the RAS Institute of Psychology and with the support of its director A.V.Brushlinsky a new international interdisciplinary society of scientists has been established to study reflexive processes and create reflexive technologies. The society was able and is ready to participate actively in solving the problems of survival and development that the mankind faces. It requires the creation of adequate organizational forms of research in contiguous branches of science. At the same time one has to admit that without the support of the government, business and political elites the problems cannot be solved and Russian intellectual potential will not be needed.

We have reasons to maintain that recommendations of the Round Table participants will be appreciated by people making important decisions, by analysts and experts. However these recommendations are not a miraculous and immediate cure. The demand a systematic and continuous mental work, in other words an active participation of all subjects in the reflexive processes of the highest order.



The Round Table materials were prepared by I. E. Zadorozhniuk

**REFLEXIVE CONTROL IN RUSSIA:
THEORY AND MILITARY APPLICATIONS**© T.L.Thomas (*USA*)Foreign Military Studies Office
Fort Leavenworth, USA**Introduction**

One of the prime goals for a commander in warfare is to interfere with the decision-making process of an enemy commander. This goal is often accomplished by the use of disinformation, camouflage, or some other stratagem. For Russia, one of the primary methods is through the use of the theory of reflexive control (RC). This principle can be used against either human-mental or computer-based decision-making processors. The theory is similar to the idea of perception management, except that it attempts to control more than manage a subject.

Reflexive control is defined as a means of conveying to a partner or an opponent specially prepared information to incline him to voluntarily make the predetermined decision desired by the initiator of the action. Even though the theory was developed long ago in Russia, it is still undergoing further refinement. Recent proof of this is the development in February of 2001 of a new Russian journal known as "Reflexive Processes and Control".

There are many examples of the use of reflexive control theory during conflicts from a Russian perspective. One of the most recent and memorable was the bombing of the market square in Sarajevo in 1995. Within minutes of the bombing, CNN and other news outlets were reporting that a Serbian mortar attack had killed many innocent people in the square. Later, crater analysis of the shells that impacted the square, along with other supporting evidence, indicated that the incident did not happen as

originally reported. This evidence also threw into doubt who were the perpetrators of the attack. One individual close to the investigation stated “I am not saying the Serbs didn’t commit this atrocity. I am saying that it didn’t happen the way it was originally reported.” U.S. and Canadian soon backed this individual, Russian Colonel Andrei Demurenko, Chief of Staff of Sector Sarajevo at the time. Demurenko believed that the incident was an excellent example of reflexive control in that the incident was made to look like it had happened in a certain way to confuse decision-makers.

This chapter will discuss the military aspect of Russia’s concept of reflexive control in some detail, and its role as an information warfare weapon. It will also briefly examine how U.S. writers interpret RC theory.

Nature of Reflexive Control

The concept of reflexive control (RC) has existed much longer than the twin concepts of information warfare and information operations. In fact, it appeared in Soviet military literature 30 years ago. At that time, V. A. Lefebvre, who was working within the context and logic of a reflexive game, defined reflexive control as “a process by which one enemy transmits the reasons or bases for making decisions to another” [1]. The development of reflexive control theory encompassed four distinct periods:

- research (from the early 1960s to the late 1970s);
- practical-orientation (from the late 1970s to the early 1990s);
- psychological-pedagogical (from the early to the mid 1990s); and
- psycho-social (from the late 1990s).

The concept of reflexive control is still somewhat alien to U.S. audiences. However, the Russians employ it not only on the strategic and tactical levels in war but also on the strategic level in association with internal and external politics within the country. Equally significant, the concept has not always benefited the Soviet Union and Russia. For example, some Russians consider that the Strategic Defense Initiative (SDI) is a classic example of U.S. use of reflexive control. In this case, the U.S. “compelled the enemy to act according to a plan favorable to the U.S.” By doing so, it forced the Soviet Union to try to keep pace with America’s achievements in the SDI arena (or at least what we said were our achievements) and ultimately exhausted the Soviet Union economically as it spent money to develop corresponding equipment. As a result, some Russians are now asking themselves whether the concept of information warfare is yet another U.S. attempt to control them reflexively and force them to invest vast sums of money in a realm that is simply beyond their technological reach in the near future.

The Soviet and Russian Armed Forces have long studied the use of reflexive control theory, particularly at the tactical and operational levels,

both for maskirovka [deception] and disinformation purposes and, potentially, to control the enemy's decision-making processes.¹ For example, the Russian Army had a military maskirovka school as early as 1904 that was later disbanded in 1929. This school, the Higher School of Maskirovka, provided the bases for maskirovka concepts and created manuals for future generations [2].

Throughout these periods, there have been many Russian intellectual "giants" who have emerged in the field of reflexive theory. In the civilian sector, these include G.P. Schedrovitsky, V.E. Lepsky, V. A. Lefebvre (who now lives in the West), D.A. Pospelov, V.N. Burkov, and many others. The foremost theorists in the military sector include V.V. Druzhinin, M.D. Ionov, D.S. Kontorov, S. Leonenko, and several others. One of the civilian theorists, Lepsky, who also is the editor of the new RC journal, hopes that the current U.S.-Russian cooperation in the realm of reflexive control will move U.S. and Russian relations from the paradigm of IW/I0 (confrontation, struggle) to a paradigm of partnership (the control of confrontation). His is a noble cause and one that must be taken seriously.

There is a growing realization on both sides that Lepsky's two paradigms will evolve in parallel. U.S. and Russian theorists are engaged in joint work regarding conflict prevention theory and are working together in Bosnia and Kosovo. At the same time, both countries are carrying out reflexive control work independently in the military sector.

RC is also considered as an information warfare means. For example, Major General N.I. Turko, an instructor at the Russian Federation's General Staff Academy, has established a direct connection between IW/I0 and reflexive control. He noted:

The most dangerous manifestation in the tendency to rely on military power relates more to the possible impact of the use of reflexive control by the opposing side through developments in the theory and practice of Information war rather than to the direct use of the means of armed combat [3].

In Turko's judgement, RC is an information weapon that is more important in achieving military objectives than traditional firepower. In this regard, Turko's understanding is most likely influenced by his belief that U.S. use of information weapons during the Cold War did more to

¹ Disinformation is a Russian technique that manipulates perceptions and information and misinforms people or groups of people. Some disinformation procedures are quite obvious, some are unconvincing, and others work through delayed perceptions, rumors, repetition, or arguments. Specific persons or particular social groups can serve as disinformation targets. The purpose of a disinformation campaign is to influence the consciousness and minds of men. In Russia today, where an unstable public-political and socio-economic situation exists, the entire population could serve as the target of influence for an enemy disinformation campaign. This is a major Russian fear.

defeat the Soviet Union and cause its demise than any other weapon. An excellent example of this fact was the U.S.'s Strategic Defense Initiative (SDI) noted earlier. Finally, Turko has mentioned reflexive control as a method for achieving geopolitical superiority and means for arms control negotiations. This latter area should be one of heightened awareness for countries entering such negotiations with the Russians.

Reflexive control theory does indeed have geopolitical significance, according to Turko. For example, he and a colleague described a new containment theory under development that portrayed new means for coping with confrontation between new large-scale geopolitical groupings [4]. This theory involves information warfare means; specifically, the threat of inflicting unacceptable levels of damage against a state or group of states by attacking their information resources. One of the most complex ways to influence a state's information resources is by use of reflexive control measures against the state's decision-making processes. Formulating certain information or disinformation designed to affect a specific information resource best accomplishes this aim. In this context an information resource is defined as:

- information and transmitters of information, to include the method or technology of obtaining, conveying, gathering, accumulating, processing, storing, and exploiting that information;
- infrastructure, including information centers, means for automating information processes, switchboard communications, and data transfer networks;
- programming and mathematical means for managing information; and
- administrative and organizational bodies that manage information processes, scientific personnel, creators of data bases and knowledge, as well as personnel who service the means of informatizatsiya (informatization) [3, pp. 257-258].

Russia's political elite also use RC in analytical methodologies used to assess contemporary situations. For example, during a recent conference in Moscow, a representative from President Yeltsin's administration noted that, when making decisions, the Kremlin pays attention to reflexive processes. Thus Turko's revelation about the central role of reflexive control in Russian conceptions of information warfare, and RC's potential use against information resources to destabilize geopolitical stability, are two important points for others to take into consideration when considering intent.

By definition, "reflexive control" occurs when the controlling organ conveys [to the objective system] motives and reasons that cause it to reach the desired decision [5], whose nature is maintained in strict secrecy. The

decision itself must be made independently. A “reflexion” itself involves the specific process of imitating the enemy’s reasoning or imitating the enemy’s possible behavior and causes him to make a decision unfavorable to himself. In fact, the enemy comes up with a decision based on the idea of the situation which he has formed, to include the disposition of our troops and installations and the command element’s intentions known to him. Such an idea is shaped above all by intelligence and other factors, which rest on a stable set of concepts, knowledge, ideas and, finally, experience. This set usually is called the “filter”, which helps a commander separate necessary from useless information, true data from false and so on [5].

The main task of reflexive control

The purpose of reflexive control is to locate the weak link of the filter, and exploit it. According to the concept of reflexive control, during a serious conflict, the two opposing actors [countries] analyze their own and perceived enemy ideas and then attempt to influence one another by means of reflexive control. A “reflexion” refers to the creation of certain model behavioral in the system it seeks to control (the objective system). It takes into account the fact that the objective system has a model of the situation and assumes that it will also attempt to influence the controlling organ or system.

Reflexive control exploits moral, psychological and other factors, as well as the personal characteristics of commanders. In the latter case, biographical data, habits and psychological deficiencies could be used in deception operations [5, pp. 29-30]. In a war where reflexive control is being employed, the side with the highest degree of “reflexion” (the side best able to imitate the other side’s thoughts or predict its behavior) will have the best chances of winning. The degree of “reflexion” depends on many factors, the most important of which are analytical capability, general erudition and experience, and the scope of knowledge about the enemy. Military author Colonel S. Leonenko added that, in the past, stratagems were the principal tool of reflexive control, but today camouflage and deception [maskirovka] have replaced stratagems, a conclusion disputed by many. For example, the Chinese have demonstrated that electronics can be used as stratagems and operate as effectively as camouflage and deception in the traditional sense.

Although no formal or official reflexive control terminology existed in the past, opposing sides actually employed it intuitively as they attempted to identify and interfere with each other’s thoughts and plans and alter impressions of one, thereby prompting an erroneous decision [5, p. 30].

Leonenko’s theories about varying degrees of “reflexive control” can be explained as follows. If two sides in a serious conflict – *A* and *B* – have

opposing goals, one will seek to destroy the other's goals. Accordingly, if side *A* acts independently of the behavior of side *B*, then his rank of "reflexion"² relative to side *B* is equal to zero (0). On the other hand, if side *A* makes assumptions about side *B*'s behavior (that is, he models side *B*) based on the thesis that side *B* is not taking side *A*'s behavior into account, then side *A*'s rank of "reflexion" is one (1). If side *B* also has a first rank of "reflexion," and side *A* takes this fact into account, then side *A*'s "reflexion" rank is two (2), and so on.

If successfully achieved, reflexive control over the enemy makes it possible to influence his combat plans, his view of the situation, and how he fights. In other words, one side can impose its will on the enemy and cause him to make a decision inappropriate to a given situation. Reflexive control methods are varied and include camouflage (at all levels), disinformation, encouragement, blackmail by force, and the compromising of various officials and officers. Thus, the central focus of reflexive control is on the less tangible element of "military art" rather than more objective "military science." Achieving successful reflexive control requires in-depth study of the enemy's inner nature, his ideas and concepts, which Leonenko referred to as the "filter," through which passes all data about the external world. Successful RC represents the culmination point of an information operation.

So defined, a "filter" is a collective image (termed "set") of the enemy's favorite combat techniques and methods for organizing combat actions, plus a psychological portrait of the enemy. Thus, "reflex" requires study of someone else's "filter" and the exploitation of it for one's own ends. In the information age, this filter is represented by human and machine (computer) data processors. The most important question then becomes, "How does one side achieve this higher degree of "reflexion" and, hence, more effective reflexive control over the enemy?" It does so primarily by employing a broader range of means for achieving surprise. In turn, it achieves surprise by means of stealth, disinformation, and avoidance of stereotypes [shablon].³

The Military Experts Speak: Ionov, Leonenko, Komov, Chausov

Major General (ret.) M. D. Ionov, one of the military specialists mentioned earlier, wrote several articles on the subject of reflexive control in *Voennia mysl* [Military thought]. He was one of the first military theorists to appreciate the value of reflexive control, although, at first, no one was inclined to listen to him. This was so since the term "reflexive control" was simply

² The term "rank of reflexion" was introduced by V.Lefebvre in the early 1960s.
(*Editor's note*)

³ Discussion with a Russian military officer in Moscow, September 1998.

not listed in any Soviet military encyclopedia when he began writing in the 1970s and, thus, could not exist! Therefore, in many of his initial articles, Ionov simply spoke about “control” of the enemy rather than reflexive control. At the same time, Ionov also realized the close link between advertising and reflexive control (“sell the holes, not the drill” and “temptation by benefit” were two of the techniques he recognized) and the combined use of various reflexive methods for waging different types of conflicts (low intensity, etc.) [6]

Given his advanced thinking about reflexive control, it is instructive to analyze one of his articles from 1995. In it Ionov noted that the objective of reflexive control is to force an enemy into making objective decisions that lead to his defeat by influencing or controlling his decision-making process. Ionov considers this a form of high art founded of necessity on an intimate knowledge of human thinking and psychology, military history, the roots of the particular conflict, and the capabilities of competing combat assets. In this instance, control over the enemy is realized by undertaking a series of measures, related by time, aim, and place, which force enemy decision-makers to abandon their original plan, make disadvantageous decisions, or react incorrectly to their ultimate disadvantage (for example, when facing a counteroffensive). The successful use of reflexive control becomes all the more likely if the enemy’s original plan is known. This makes it easier for the “controlling side” to force the enemy into making wrong decisions by employing reflexive control techniques such as intimidation, enticement, disinformation, deception, and concealment and other measures designed to shorten his decision-making time by surprising his decision-making algorithms [7].

Ionov also stated that the content and methods employed must accord with the interrelationship between the enemy’s thought processes and basic psychology. They also had to be realistic, and newly created methods had to be considered within the context of new technologies. Furthermore, he recognized that any coalition of enemy forces represents a far more complex system whose stability changes depending on the nature of the situation in each individual state and the condition of the coalition. Finally, because sharp differences exist in thinking, aims, politics, and ethical approaches of each state, each side must conduct an internal appraisal to determine the possible results of any action conducted in accordance with complex criteria reflecting the nature of the confrontation.

Ionov identified four basic methods for assisting in the transfer of information to the enemy to promote control over him [7]. These methods, which serve as a checklist for commanders at all levels, include:

Power pressure, which includes: the use of superior force, force demonstrations, psychological attacks, ultimatums, threats of sanctions, threats

of risk (developed by focusing attention on irrational behavior or conduct, or delegating powers to an irresponsible person), combat reconnaissance, provocative maneuvers, weapons tests, denying enemy access to or isolating certain areas, increasing the alert status of forces, forming coalitions, officially declaring war, support for internal forces destabilizing the situation in the enemy rear, limited strikes to put some forces out of action, exploiting and playing up victory, demonstrating ruthless actions, and showing mercy toward an enemy ally that has stopped fighting.

Measures to present false information about the situation, which includes: concealment (displaying weakness in a strong place), creation of mock installations (to show force in a weak place), abandoning one position to reinforce another, leaving dangerous objects at a given position (the Trojan Horse), concealing true relationships between units or creating false ones, maintaining the secrecy of new weapons, weapons bluffing, changing a mode of operation, or deliberately losing critical documents. The enemy can be forced to find a new target by conflict escalation or de-escalation, deliberate demonstration of a particular chain of actions, striking an enemy base when the enemy is not there, acts of subversion and provocation, leaving a route open for an enemy to withdraw from encirclement, and forcing the enemy to take retaliatory actions involving an expenditure of forces, assets, and time.

Influencing the enemy's decision-making algorithm, which includes the systematic conduct of games according to what is perceived as routine plans, publishing a deliberately distorted doctrine, striking control system elements and key figures, transmitting false background data, operating in a standby mode, and taking actions to neutralize the enemy's operational thinking.

Altering the decision-making time, which can be done by unexpectedly starting combat actions, transferring information about the background of an analogous conflict so that the enemy, when working out what seems feasible and predictable, makes a hasty decision that changes the mode and character of its operation.

According to Ionov, one can assess human targets of reflexive control either by personality or group depending on the specific individual's or group's psychology, way of thinking, and professional level of training. Both universal and role-based characteristics apply to individuals and groups. Universal characteristics include rejection or fear of danger, unwillingness to do someone else's work, or an arbitrary and uncompromising orientation toward confrontation. Reflexive control focuses on the role played by a particular person or group of persons (history, leadership, subordination, etc.) [7]. In another article entitled "Control of the Enemy," which appeared in the Navy journal, *Morskoi sbornik* [Naval collec-

tion] in July 1995, Ionov argued that information is needed on the status of enemy forces, the nature of their actions, and their capabilities in order to control him and, simultaneously, halt or retard his counter control efforts [8]. Ionov advanced several distinct principles necessary for “control of the enemy.”

First, he underscored the reflexive nature of the desired response, slating that commanders must visualize the possible enemy response to the conditions one desires to impose. Second, the response will be problematic since the enemy may discover the activity and undertake his own counter control measures. Third, the level of technical developmental of combat weapons, and especially reconnaissance, is of growing importance. This makes the exposure of an action aimed at misinforming the enemy more likely. The final principle is the use of harsh forms of pressure on the enemy, specifically those that consider social elements and intellectual, psychological, ethical and ideological factors. Deliberate cruelty toward the civilian population or prisoners of war in a combat region, a declaration of unrestricted submarine warfare (to sink any vessels to include those of neutral countries), and so on serve as excellent examples of the latter.³ In short, in Ionov’s view, reflexive control is a specific yet traditional Soviet and now Russian form of an informational or psychological (PSYOP) attack.

Colonel S. Leonenko integrated information technologies and reflexive control theory in his writings. He noted that the use of computers could hinder the use of reflexive control by making it easier to process data and calculate options. This is so since an opponent can more easily “see through” a reflexive control measure by an opposing force by simply using a computer. The computer’s speed and accuracy in process information can detect the reflexive control measure. On the other hand, in some cases, this may actually improve the chances for successful reflexive control since a computer lacks the intuitive reasoning of a human being [5, p. 29].

Computer technology increases the effectiveness of reflexive control by offering new methods adaptable to the modern era that can serve the same ends. Writing in 1995 from a military perspective, Colonel S. Leonenko defined reflexive control as follows:

RC (reflexive control) consists of transmitting motives and grounds from the controlling entity to the controlled system that stimulate the desired decision. The goal of RC is to prompt the enemy to make a decision unfavorable to him. Naturally, one must have an idea about how he thinks [5, p. 28].

Leonenko then assessed the new opportunities that the use of computer technology afforded to reflexive control, stating:

In present conditions, there is a need to act not only against people but also against technical reconnaissance assets and especially weapons guid-

ance systems, which are impassive in assessing what is occurring and do not perceive to what a person reacts [5, p. 28].

If an IW or IO operation system cannot perceive what a person reacts to and is unable to assess what is occurring, does this mean that it provides only insignificant data? Or does it mean that there are two layers to reflexively control? The first layer consists of the “eyes, nose, and ears” of sensors, satellites, and radars. The second layer is the “brain software” of humans, which gathers, processes, and produces knowledge from the information or makes decisions based on it. But what happens if the “eyes, ears, and nose” are manipulated? How does that affect the input into decisions and knowledge? The recent use of such military activity by Yugoslav forces in the Balkans fooled NATO sensors over Kosovo and resulted in NATO shooting at targets that were fakes.

Yet, in the end, we do leave some decisions to computers. This indicates to Leonenko that we live in a much more frightening existence than we care to believe if, in fact, decisions are in the hands of machines that are “incapable of assessing what is occurring and do not perceive what a person reacts to.”

Further, Leonenko noted that “how the enemy thinks” is shaped by combat intelligence and a collective image (set) made up of concepts, knowledge, ideas, and experience. This “set,” which he calls a “filter,” helps a commander separate necessary from useless information. Then, the chief task of reflexive control is to locate the weak link in the filter and find an opportunity to exploit it.

Leonenko’s definition of reflexive control fits well with Russian Major Sergei Markov’s understanding of an information weapon. Like Markov Leonenko defines an information weapon as a, “Specially selected piece of information capable of causing changes in the information processes of information systems (physical, biological, social, etc., in this case, decision-making information) in accordance with the intent of the entity using the weapon.” Accordingly, it causes change in the information processes of an opponent by persuading them to make decisions according to the design of the controller, and it affords the information weapon a methodology for controlling an opponent. So defined, reflexive control can be applied in the modeling and decision-making contexts of various types of conflicts (international, military, etc.). It can also be used in social processes and systems.

At the present time, there is a reflexive control movement underway in Russia that is influencing approaches to various branches of knowledge. This embraces philosophy, sociology, psychology, pedagogy, problems of artificial intelligence and computer science in general, computer “control” influence, military affairs, intelligence, counterintelligence, and a

number of other areas. For example, The Applied Ergonomics Association devoted a special edition of its journal (No. 1, 1994) to reflexive control processes [1, p. 2].

Another Russian military theorist who wrote on the information impact on RC was Colonel S. A. Komov, who was perhaps the most prolific Russian military writer on information warfare topics in the 1990s. Writing in the journal *Voennaia mysl*, Komov supported Ionov's emphasis on reflexive control. He renamed reflexive control over the enemy as "intellectual" methods of information warfare. He then listed the basic elements of an "intellectual" approach to information warfare, which he described as:

- distraction (by creating a real or imaginary threat to one of the enemy's most vital locations [flanks, rear, etc.] during the preparatory stages of combat operations, thereby forcing him to reconsider the wisdom of his decisions to operate along this or that axis);
- overload (by frequently sending the enemy a large amount of conflicting information);
- paralysis (by creating the perception of a specific threat to a vital interest or weak spot);
- exhaustion (by compelling the enemy to carry out useless operations, thereby entering combat with reduced resources);
- deception (by forcing the enemy to reallocate forces to a threatened region during the preparatory stages of combat operations);
- division (by convincing the enemy that he must operate in opposition to coalition interests);
- pacification (by leading the enemy to believe that pre-planned operational training is occurring rather than offensive preparations, thus reducing his vigilance);
- deterrence (by creating the perception of insurmountable superiority);
- provocation (by force him into taking action advantageous to your side);
- suggestion (by offer information that affects the enemy legally, morally, ideologically, or in other areas); and
- pressure (by offer information that discredits the government in the eyes of its population).

Finally, an article by Russian Captain First Rank F. Chausov continued the discussion of reflexive control. He defined RC as "the process of intentionally conveying to an opposing side of a certain aggregate information [attributes] which will cause that side to make a decision appropriate to that information" [10]. More important, Chausov discussed the risk involved with using RC.

To justify the methods of using force while taking risk into account, the numerical measure R_0 is introduced as the difference between the assessments of guaranteed effectiveness, or E_g , and the projected (situational) effectiveness, E_s . The estimate of the guaranteed effectiveness represents

the lower limit of the effectiveness indicator, given any type of enemy action and fixed actions by our own forces. Situational effectiveness refers to the effectiveness of a force's action which is achieved through a certain type of action based on a commander's decision.

Chausov listed the principles of RC as (1) a goal-oriented process requiring a complete picture of all RC measures needed; (2) an "actualization" of plans, that is providing a sufficiently complete picture of the intellectual potential of commanders and staff officers (based on their reality), especially when conditions are determined by global information space; (3) the conformity of goals, missions, place, time and methods for RC's conduct; (4) the modeling or forecasting of the condition of a side at the time actions are being implemented; and (5) the anticipation of events.

U.S. Interpretation of Russia's RC theory

While V. A. Lefebvre remains the premier authority on RC issues in the U.S., and perhaps in the world, other U.S. analysts have tried to decipher the principles of RC. Several years ago, American Clifford Raid demonstrated a thorough understanding of reflexive control theory in a chapter he wrote for the book *Soviet Strategic Deception*. By using only Soviet sources, Raid distilled Russian reflexive control mechanisms into the following categories of reflexive interactions [11]:

- (1) Transfer of an image of the situation: providing an opponent with an erroneous or incomplete image of the situation.
- (2) Creation of a goal for the opponent: putting an opponent in a position in which he must select a goal in our favor (for example, provoking an enemy with a threat to which he must rationally respond).
- (3) Form a goal by transferring an image of the situation: feigning weakness or creating a false picture.
- (4) Transfer of an image of one's own perception of the situation: providing an opponent with false information or portions of the truth based on one's own perception of the situation.
- (5) Transfer of an image of one's own goal: a feint by a basketball player is a classic example where you change the enemies perception of where he thinks you are or are going.
- (6) Transfer of an image of one's own doctrine: giving a false view of one's procedures and algorithms for decision-making.
- (7) Transfer of one's own image of a situation to make the opponent deduce his own goal: presenting a false image of one's own perception of the situation, with the accepted additional level of risk.
- (8) Control of a bilateral engagement by a third party.

- (9) Control over an opponent who is using RC: exploiting opportunities identified as imitation of the initiators own process of RC.
- (10) Control over an opponent whose doctrine is game theory.

Most analysts consider the U.S. term most closely associated with RC to be perception management, the difference being in the quantifiable differences in the terms manage and control. Much has been written in the U.S. on perception management. Lockheed Martin Aeronautics analyst E.T. Nozawa took a different perspective on RC, however, comparing and contrasting the theory with that of the scientific philosophy of Charles Sander Peirce (1839-1914).

This term is not as well known to the U.S. public as perception management, although it is gaining a lively following of late. Peircean Semiotic, a subset of scientific philosophy, refers to the totality of scientific Peircean knowledge. Semiotic (pronounced See-My-Oh-Tick) is the science of signs. For Peirce this meant a higher logic that included speculative grammar, critic (lower logic), and speculative rhetoric.

Nozawa has noted that Russian specialists discuss two different types of reflexive schools of thought. One is the school of Reflexive Processes, and the other is a subset of those processes, Reflexive Control, the idea under consideration here. Most Americans have difficulty making this distinction. Nozawa notes that a comparison of the Russian scientific paradigm of Reflexive Processes as described by Vladimir Lepsky and Vladimir Lefebvre with Peirce's concepts shows that they are very similar in their subject content and goals [12].

It may be said that Peircean Semeiotic is more advanced in its theoretical conceptual development whereas Reflexive Processes is more advanced in having developed practical applications.

There is nothing equivalent in the Peircean domain (or any other Western school of thought) to the Reflexive Control equations developed by Lefebvre and Lepsky with the supporting developments in characterizing Free Will. Lefebvre, according to Nozawa, combined the integrated concepts of Feelings, Free Will, and Thinking with the concepts of situational awareness and reality. The integrated processes became known as Reflexive Processes, filling the void in mentalistic sciences created by Behaviorism.

A study of the proceedings of the October 2000 Reflexive Control Symposium held in Moscow would probably reveal additional areas of development. It may be said that Reflexive Processes is a form of Peirce's highly developed Scientific Philosophy and that it could easily be replaced by Peirce's Scientific Philosophy.

The following table shows Reflexive Processes and the corresponding elements of Peircean Scientific Philosophy:

Reflexive Processes	Scientific Philosophy
Situational Awareness	Phanerescopy (Sit. Awareness)
Reflexive Control	Normative Science
Feelings	Esthetics
Free Will	Ethics
Thinking	Semeiotic
Reality	Metaphysics (Reality)

Although the terminology is different, the words describing Peirce's categories have the same general meaning as those of Reflexive Processes. Peirce, however, was more precise in his definitions and the underlying construct of his theoretical knowledge is better developed, according to Nozawa. The Peircean categories should be interpreted as scientific categories and not metaphysical or theological.

Recent Examples of RC

The Russian military has actively attempted to exploit the concept of reflexive control during the recent past. For example, during the temporary occupation of the Russian White House by members of Parliament in October 1993, the Russian military reputedly employed reflexive control to remove the parliamentarians and their supporters from the building, albeit against the explicit orders of Russian President Boris Yeltsin. How they did so is quite interesting. For days, President Yeltsin had not been able to make the White House's occupiers budge. Additionally, the occupiers even refused to come out to address their supporters who had surrounded the building, probably because the Russian security police (MVD) or regular police were also in the crowd and might try to overpower them.⁴

Therefore, the security services developed a reflexive control plan. According to the plan, on the day of an immense demonstration in support of the White House's occupiers, the police permitted one of its communication posts to be overrun by the protestors. At the same time, the military authorities broadcast deceptive messages over an inactive frequency, while making it appear that the messages were actually a conversation between two high ranking Ministry of Internal Affairs (MVD) officers, who were discussing the imminent storming of the White House.

The two officers discussed details of the "operation," which they implied was an attack designed to clear the occupants out of the building. One of the officers said repeatedly, "No matter what, get the Chechen. Kill him if you have to." In fact, the reference was to Ruslan Khasbulatov, the

⁴ The Ministry of Internal Affairs (MVD) has no counterpart in the United States. In addition to the Russian regular police force, it also consists of police elements tasked with containing ethnic conflict or riots throughout the country, a mission somewhat familiar to our National Guarda.

speaker of the Parliament, who was a Chechen and one of two key figures in the occupation (the other being former Vice President Alexander Rutskoi). Within a few minutes of receiving this information, both Khasbulatov and Rutskoi emerged on the White House's balcony and asked the crowd to go instead to the Ostankino TV station and capture it. The reflexive control operation had indeed worked. As a result, Yeltsin now had a *raison d'être* to act against both Khasbulatov and Rutskoi based on the latter's call for civil disobedience.⁵ In effect, the two MVD officers had effected both leader's actions and put ideas into their heads that provided grounds for the demise of this plan. They did so by literally "getting into" the leaders' minds.

Another excellent example of Soviet use of reflexive control theory occurred during the Cold War when the Soviet Union attempted to alter U.S. perceptions of the nuclear balance. The aim of this reflexive control operation was to convince the West that its missile capabilities were far more formidable than they actually were. To do so, Soviet military authorities paraded fake ICBMs to deceive the West. The Soviets developed the fake missiles so as to make the warheads appear huge and to imply that the missile carried "multiple warheads." In this case, the Soviets understood their opponent's "reflexes." Soviet authorities realized that foreign attaches regularly attended these shows since this was one of the few opportunities to obtain military information legally. Moreover, since the Soviet Union did not even participate in arms control fairs, the parade held special significance for intelligence officers. After observing the parade, the Soviets knew that the attaches would then report their findings in great detail to Western intelligence organs. In addition, the Soviets knew that members of the Western military-industrial complex also studied the parades closely.

However, the deception did not end here. The Soviets also prepared other disinformation measures so that when Western intelligence services began to investigate the fake ICBMs, they would find collateral proof of their existence and would be led further astray. Ultimately, the aim was to prompt foreign scientists, who desired to copy the advanced technology, down a dead end street, thereby wasting precious time and money [13].

Final thoughts on RC...

Russian civilian and military theorists will undoubtedly continue to study the problem of reflexive control and the associated tools of manipulation and deception. For example, the Russian Academy of Science's Institute of Psychology has a Psychology of Reflexive Processes Laboratory that studies

⁵ As related by an MVD lieutenant to the author in Moscow in 1994.

elements and applications of the “reflexion” in considerable detail. It is studying not only ways to use the concept, but ways to keep the concept under control through international discussions and awareness. The Institute is playing a very positive role in that regard that should not be overlooked. In the information age, however, military analysts will continue to use the concept to manipulate an adversary on the field of battle. The most complex and dangerous application of reflexive control will remain its employment to affect a state’s decision-making process by use of carefully tailored information or disinformation.

A detailed information security doctrine is one of the most important deterrents or defenses against an enemy’s use of reflexive control or similar processes against Russia, according to many Russian scientists. Russia’s September 2000 Information Security Doctrine is a step in this direction. According to Turko and Prokhozhev, information security means the degree to which a state is protected against both deliberate and unintentional actions that can lead to the disruption in the functioning of state and military command and control. The most significant of those threatening actions is disinformation that seeks to exert a goal-oriented effect on public opinion or on decision-makers for the purposes of reflexive control [3, p. 259]. The dialectical interaction of reflexive control against a state, and information security countermeasures within a state, will inevitably have a significant geo-political impact on that state as well.

Thus RC theory will remain a most important area of study for the immediate and long term future for Russian and other international groups alike.

References

1. V.E. Lepsky, Reflexive Control in Multi-Subjective and Multi-Agent Systems / Proceedings of the Workshop on Multi-Reflexive Models of Agent Behavior. 18-20 August 1998, Los Alamos, New Mexico. P. 111-117.
2. Major General Evgenii Korotchenko and Colonel Nikolai Plotnikov, “Informatsiia – tozhe oruzhie: 0 chem nel’zia zabyvat’ v rabote s lichnym sostavom” [Information is also a weapon: about which we cannot forget in working with personnel] Krasnaia zvezda [Red star], 17 February 1994, p 2.
3. A.A. Prokhozhev and N.I. Turko, Osnovi Informatsionnoi voini [The Basics of Information Warfare], report at a conference on “Systems Analysis on the Threshold of the 21 Century: Theory and Practice,” Moscow, February 1996, p. 251.
4. N.I. Turko and S.A. Modestov, Refleksivnoe upravlenie razvitiem strategicheskikh sil gosudarstva kak mekhanizm sovremennoi geopolitiki [Reflexive Control in the Development of Strategic Forces of States as a Mechanism of Geopolitics], report at the conference on “Systems Analysis on the Threshold of the 21th Century: Theory and Practice,” Moscow, February 1996, p. 366.
5. S. Leonenko, “Refleksivnoe upravlenie protivnikom” [Reflexive control of the enemy], Armeiskii sbornik [Army Collection], No. 8, 1995, p. 28.

6. *M.D. Ionov*, "Psikhologicheskie aspekty upravleniia protivnikom v antagonisticheskikh konfliktakh (refleksivnoe upravlenie)" [Psychological aspects of controlling the enemy during antagonistic conflicts (reflexive control)], *Prikladnaia ergonomika* [Applied ergonomics], No. 1 (January 1994), Special Issue, p. 44, 45. *F. Chausov*, "Osnoyi refleksivnogo upravleniya protivnikom," *Morskoi sbornik* [Navy collection], No 9, 1999, p. 12. The author would like to thank Mr. Robert Love of the Foreign Military Studies Office for his help in translating this and other segments of Chausov's article.
7. *M.D. Ionov*, "On Reflexive Control of the Enemy in Combat," *Military thought* (English edition), No. 1 (January 1995), pp. 46, 47.
8. *M. Ionov*, "Control of the Enemy," *Morskoy sbornik* [Naval collection] No 7 (July 1995), pp. 29-31, as reported in FBIS-UMA-95-172-S, 6 September 1995, pp 24-27.
9. *S.A. Komov*, "About Methods and Forms of Conducting Information Warfare," *Military thought* (English edition), No. 4 (July-august 1997), pp. 18-22.
10. *F. Chausov*, "Osnovi refleksivnogo upravleniya protivnikom," *Morskoi sbornik* [Navy collection], No 9, 1999, p. 12. The author would like to thank Mr. Robert Love of the Foreign Military Studies Office for his help in translating this and other segments of Chausov's article.
11. *Clifford Reid*, "Reflexive Control in Soviet Military Planning," *Soviet Strategic Deception*, edited by Brian Dailey and Patrick Patker, (Stanford, CA: The Hoover Institution Press), pp. 293-312.
12. *E. T. Nozawa*, Private communication with the author, October, 2001.
13. *Aleksei Baranov*, "Parade of Fakes", *Moskovskii komsomolets* [Moscow Komsomol], 8 May 1999, p. 6 as translated and entered on the FBIS web page, 11 May 1999.

REFLEXIVE PROCESSES AND INTERNET

REFLEXIVE PROCESSES IN INTERNET INTERACTIONS: (AS THE EXAMPLE OF CHESS GAMES)

© V.P. Zinchenko (*Russia*)



Russian Academy of Education
Member, Doctor of Psychology

In this brief essay, I intend to dwell upon some deep psychological features of Internet interactions, where an important place is occupied by the specifics of reflexive processes.

Let's consider an example of sport contest in which self-reliance is the most important condition of victory. I have deliberately chosen this game, elements of game are present, to some extent, in any activity; without them it would be not effective enough and just boring. Of course, it is important to set some limits without which people would not only play but overplay with the nature, technology or each other. In our age, computer games became the main problem.

Let us consider the latest quite expensive, exciting and spectacular game by Garry Kasparov with the highly-respected Deep Blue Box. It is well known that the world champion knows his strength, believes in himself and has high level of pretensions. All of the above is well grounded and confirmed by his maximal rating in 'protein chess', as it is common to say with a shadow of neglect. (It seems to me that human spirit, without which no contest is possible, is not a 'protein body').

Any activity and especially a game is characterized by a contradictory union of feeling and knowledge, affect and intellect. Naturally, this union is a characteristic of a human being not a computer. This union may hide the secret of success in 'human' chess, and its violation led to the failure of the world champion G.Kasparov's, as in the event analyzed further. Grand master Yuri Razuvaev defines chess game as a theatrical play to which

audience is attracted by the players' intellectual creativity and drama of battle.

A violin player in Vladimir Nabokov's "Luzhin's Defense" said about chess: "Combinations are as melodies. I simply hear the moves."

A chess and piano player, Mark Taimanov, has drawn interesting parallels between chess players and composers: "...Rakhmaninov is Alekhin... And the first world champion Wilhelm Steinitz is, of course, Bach, in the depth, in the extensive range of feelings and thoughts. Smyslov is Chaikovsky – the same wonderful harmony. Spassky is Scriabin, Thal – Paganini: the same devilish outlook, unlimited phantasy. Fisher is List. Bright ideas, expansion. Karpov is Prokofiev, very light, modern and virtuoso. And Kasparov is Shostakovich with a grand scale and dynamics" [1]. The pairs named are the best evidence that chess is a game of art.

Osip Mandelstam who gave acoustics to the eye and increased the density of an image wrote about a game in the following way: "The danger of being moved impends over each piece during the game, during the whole stormy time of the tournament. The chessboard swells with tense attention. Chess pieces grow when they get into the key focus of a combination as mushrooms during Indian summer" [2].

Razuvaev quotes Glevenfish: "One cannot win having experienced nothing. In order to win... a player should give himself away". According to Boris Spassky, a grand master experiences a "little death" after a failure in a tournament [3].

Creating of an adversary's image is a must in any contest. In chess, the adversary's image includes an image of the player himself, from the opponent's point of view. This is called 'deep planning of moves' at different levels, the planning which consists not only of a player's moves but also of his opponent's moves. In a more simple way one can imagine two sets of opposing matreshka-dolls inserted one into the other. In each set, the player's own matreshkas alternate with those of his opponent's.

According to Vladimir Lefebvre [4], this is a situation of reflexive control [4] and the number of matreshkas in a set determines the number of levels of reflexion, the number of foreseen moves, the depth of a strategy. Of course, reflexion and strategy can be both helpful and destructive. This is a classical situation of any interaction, be it a partnership, cooperation, contest, conflict, struggle, war, etc., in which anxiety and passions can hardly be brought down. That is why the chess game has, since old time, served as a model in studies of thinking in general and operational thinking in particular. It is not only psychologists who are curious about ways of choosing the best move out of many alternatives. This is the same problem of overcoming the oversupply of possible ways and programs of actions caused by incredible difficulty of a game situation. And maybe

what matters is not the choice itself but rather the development of a new alternative? In favor of the last statement some really rare cases of 'blindness' noticed in games of outstanding chess players towards very simple decisions: "the complicated is {clearer to them}", as for the ordinary people as well.

There is a way of overcoming exuberance in thinking. Its units are not single moves but whole positions or their images whose evaluation includes also the aesthetic criteria.

In human chess, the image or the active symbolical body of an opponent is always concrete and biased. The image is quite detailed even before the contest. The functional, strategical or operationally-technical portrait of an opponent is always enriched by a psychological portrait real or imagined this is not important but trustworthy, from the player's point of view.

By using terms from engineering psychology we can say that even before the game, the player has a conceptual and emotional a priori model of an opponent, an image of an enemy, if you want. In the process of the game this image becomes more precise, rebuilt and updated. Malkin told me that in one of the games Averbach playing against Korchnoi in a complicated situation, deliberately sacrificed a pawn. The opponent did not accept this sacrifice and in answering "why?" (after the game was over) said that he trusted Averbach. He did not trust everyone, of course. Very interesting are the remarks of Kotov about Fisher: "Fisher is a menacing and implacable force. He bends over a table, impends over your pieces, his eyes are bright. One may have an impression that he is a shaman casting spells or a priest reading prayers".

Some chess players prefer to hide behind the curtain after making a move, in order not to give trumps to such experienced psychologists as Botvinnik who always watched the opponent even when the latter stood up and strolled the stage. This is a sign of respect to an opponent and in a way a suppression of one's own feeling of superiority. During important games, there is no place for such feelings. Razuvaev recalls a tournament of quick chess in Paris a few years ago during which a big screen was erected to show players' faces and hands. Even experienced professionals were surprised watching their own feelings.

In the situation of his game with the computer, Kasparov should have built an image of the opponent who would have (as he himself) the experience of the entire world's chess elite players including the whole experience, the all findings, and the very style of Kasparov's himself, all his victories and losses, i.e., all his strong and weak points. In other words, Kasparov should have opposed a depersonalized experience of the whole chess world in its history. Moreover, this world was coldly-calculating, sense-

less, indifferently-cruel, impersonal, inhuman, which means that it had no human shortcomings. The knowledge in this world lacks not only passion but also life itself as Frank would put it. One cannot glance into this world and see one's reflection from the other's point of view.

Kasparov failed to build an image, a symbolic body or model of this monster. It is also possible that his acquaintance with its creators, lovely people, had an impact on him. They must have produced an impression to him, a "normal man", of a "collection of crazy people" (this is an expression of Leslie Groves, the military head of the atomic project in Los Alamos, New Mexico) who were not even chess experts. It seems that the problem of creating an image of this image is hard to solve. Metaphors do not work in this case, they cannot replace the image. There is, however, a starting point for building it, and probably even for developing a strategy to face an opponent of this type. Let's take Mandelstam's definition of machine poetry given in 1922 as our starting point:

"A purely rational, machine, electromechanical, radioactive and any technical poetry is not possible due to the fact which should be clear both to the poet and the mechanic: rational machine poetry does not collect energy, does not acquire it as natural poetry, it can only spend and waste it. Discharge is equal to charge. It unbounds to the extent it has been twisted. A spring cannot return more than it knows in advance (*italics is mine, V.Z.*) A machine lives a deep and spiritual life but it does not produce seeds" [2, p. 277].

In human chess, the opponents recharge each other with energy (or they "suck" it out of each other as vampires). The seeds mentioned by Mandelstam are creativity and its companions: emotions, affect, and passion. It is appropriate to recall here Mamardashvili's explanation of Descartes' understanding the relationship between passion and action: "passion to something is always an action in some other sense. So as without any action behind it or in it (or let's put it in the way of its core moving here)" [5, p. 321]. The same relationship that connects passion and action connects feelings and intellect. If we decipher the empty word "combination" then passion can be considered to be the outer form of an action, intellect, and the two as its inner forms. The reverse situation is also true: action, intellect are external forms and passion is an internal one. What matters is a point of view or a scale. It is this internal form that the computer program opposing Kasparov lacked.

Vasily Smyslov had similar ideas: "the psychological component present in direct contests when grand masters meet over a board of chess face to face, in the internet chess, is brought down to zero." Many great chess players intimidated their opponents with the energy and emotional power. In this sense, internet chess more resembles art than a cruel sport game.

How else can we explain that not an outstanding Dutch grand master, Picket, has won one by one three games with leading Russian chess players: Morozevich, Svidler, and finally Kasparov? It is possible that Internet chess will exclude psychological and emotional problems and help to find out a “pure chess champion” [6]? A gloomy outlook.

A preparation to a game with a passionless adversary should be different in principle (if one does not give up with fighting right from the start...). One has to prepare to the fight not against a genius but against a very intellectual idiot (idiot in the Greek not swear meaning of the words, i.e. an ideal idiot) for whom the affective-personal, vital, semantic sphere is absolutely inaccessible. An idiot who, although calculates his behavior in detail, cannot be suddenly inspired and does not have mysterious intuition. Nazarov and I once jokingly deciphered a conventional abbreviation of “artificial intelligence” as “invalid intelligence”. I think another deciphering would be more appropriate: artificial intelligence is an ideal idiot. By the way, we should ask why we stick to the tradition of spending more money on creating AI than on studying and developing the normal human thinking. The supporters of AI should remember how many billions it cost to explain {to} this AI that the humankind is entering the new millennium. It would be even more difficult to explain to AI the meaning of words “to dig from a fence to the dinner time.”

Perhaps, it could be psychologically productive to create an image of this depersonalized monster by attributing some personal characteristics to it, making the image subjective, insert there a collective image of a live opponent. We do animate and poetize the Space, we flirt with it. It is difficult to deal with inhuman power. It scares. One does start thinking of using unconventional means ...

Kasparov's loss in the last game had psychological causes. When defending he submitted to the program what turned out to be fatal. According to his own words, by submerging into details he lost the general outlook of his own mind which means that, even if he had not lost himself, he still weakened his self-confidence. An opponent like that should be fought with using the “seventh variant” which means that the position should be active rather than responsive. In the next game, Kasparov would need to demonstrate “pure art” even in the well known classical positions. I think the genius can bring an idiot to a dead end, put him in a corner, so that as Razuzaev says “Comrade Pentium would begin bustling in a critical position not knowing what move to chose.” However strange it may seem, but Kasparov or some other brave man needs to employ to the full extent not only his intellectual and creative potentials, game spirit, sense of humor, but also his strong self-confidence. All of this will produce a feeling of freedom, strength, but not superiority which is not allowed even for

professionals and masters of the game, since it may produce underestimation of the opponent what has happened to Kasparov.

In conclusion of this chess essay I, a layer in chess, would like to say that chess is not only a game (work, mental effort) but also a burst of passion. Chess is certainly logic, but also intuition, not simply on its own but based on the experience, of course, knowledge, talent, and genius. In other words, chess is a miracle, mystery which is like music, ballet, poetry... And it will be a pity if this mystery goes to the computer which will not enjoy it and will not discover it, since a mystery is not interesting for an idiot.

References

1. "Komsomolskaya pravda" newspaper. 1999. January 27. (In Russian)
2. *O. Mandelstam*. Collection of works (in 2 volumes)- Moscow, 1990. (In Russian)
3. *Razuvaev J.* "Nedelia" newspaper. 1998, #9. (In Russian)
4. *Lefebvre V.A.* Conflicting structures. 3rd edition. Moscow, RAS Institute of Psychology, (In Russian)
5. *Mamardashvili M.K.* Cartesian discourse. Moscow, Progress, 1993. (In Russian)
6. "Izvestia" newspaper. 2002, March 2. (In Russian)

REFLEXIVE PROCESSES AND SECOND ORDER CYBERNETICS

SECOND ORDER CYBERNETICS IN THE SOVIET UNION AND THE WEST

© V.A. Lefebvre (*USA*)



University of California, Irvine, USA,
Professor

1. Second order cybernetics

In the early 1960's, cybernetics underwent surprising changes: an investigator studying Univesum suddenly turned into the object of investigation. The languages of systems representation and cognitive research procedures themselves became the objects of investigation - just as morphological and functional structures were before. The process of "self-objectification" began independently in the Soviet Union and in the West. This shows that cybernetics develops according to its own immanent logic and independent of current fashions, the individual priorities of particular scientists or cultural stereotypes. On the other hand, the differences between Soviet and Western approaches make it very interesting to compare them. Their integration will allow us to see more clearly the general structure of the set of problems, methods and schemes which is called cybernetics.

The concept of "self-objectification" was in the air in Moscow's philosophical and cybernetic seminars in the early 1960's. It seems that I was the first to formulate this idea distinctly (*Lefebvre, 1965*). At that time I worked in a classified military institute studying the problem of how to automatize decision making; the problem of "self-objectification" appeared to me not only in its abstract philosophical form, but also as a problem related to describing the interaction of military systems. I have worked out a special formalism called "reflexive analysis" and introduced a con-

cept called “reflexive control”, useful for studying the informational influence on a system that is capable of “awareness” of itself and of the influencing system.

In 1967, I succeeded in publishing a non-classified book *Conflicting Structures*, describing the main results of my work. I will take the liberty of citing two passages from this book.

We isolate a special class of objects which we refer to as “objects comparable to the investigator in their complexity.”

Consider, for example, an army commander as an investigator who wishes to analyze the object in front of him - an enemy’s army. He may analyze this as he would any other innocuous, ordinary looking object: by constructing a configurator consisting of two projections – spatial location of the enemy’s army and its functional structure. But this analysis is not adequate to deal with the problem at hand.

The commander’s most important objective, from his point of view, is to discover the enemy’s plans, to find out to what extent the spatial and functional structures are “natural”, and to what extent they are deliberately contrived by the enemy in order for the commander to discover and be deceived by them. In this case, the investigator has to reflect the “inner world” of the object. He needs special tools to do so; we will call these tools “reflexive” ones. The distinction between investigator and object, which is usually quite clear, now disappears. An external observer identifying himself with the investigator finds himself in a tight corner. What can he do if the object is also an investigator? The observer may assume a “pathological” position: to look at everything from the object’s point of view (to analyze the investigator from the point of view of an object!) (Lefebvre, 1967, p. 9-10). A complex organism appears as a special symbiosis of disparate structures in the same material. Several functional structures exist in one “morphological body” and each of them lives its own life ...

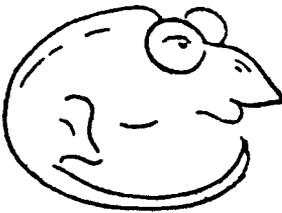


Рис. 1

We illustrate this idea with an example commonly found in popular psychology books.

Figure 1 contains two pictures made from the same lines: on the one hand, it is a profile of a man, on the other, a mouse. We may read this drawing in two ways, and what we see depends on our schematization.

Now let the reader imagine that the mouse and the profile live their lives independently. Let them (not an external observer) look at themselves, “feel” their entity, and try to change their shape. While waving its tail, the mouse wrinkles the neck of the profile. In order to exist, the mouse and the profile have to maintain certain obligations to each other. It is also possible that one of them could change and keep his own essential features but destroy those of the other one.

In this example, the “external observer” is identified with an object. We have created an abstract object in which several different “investigators-constructors” are made in the same material. The process of “observing” the object is closed to the object itself (Lefebvre, 1967, p. 17-18).

This idea of the object-investigator is analogous to Heinz von Foerster's aphorism given in the Foreword to the collection of his works by Francisco Varela (*von Foerster, 1981, p. xvi*):

First order cybernetics: the cybernetics of observed systems. Second order cybernetics: the cybernetics of observing systems.

I will use the term "second order cybernetics" in this very way: it is a set of concepts and methods for the investigation of "observing systems". The ideas of second order cybernetics played a completely different role in the Soviet Union than in the West. In the Soviet Union it formed the conceptual basis for methods of influencing the enemy's decision making process during a military conflict. The concept of "reflexive control" was used for the description and planning of such an influence (see, for example, the books by V.V.Druzhinin, Deputy Chief of General Headquarters, 1972, 1976, 1982). In the West, however, the study of second order cybernetics was confined to a very small group of researchers shaping its studies in a very esoteric manner.

Western second order cybernetics developed a more elaborate epistemology, while the Soviets surpassed the West in clear formulations and the ability to solve specific problems.

2. Self-reference and self-reflexion

The most significant distinction between Western and Soviet approaches was determined by the West's preoccupation with biological problems and the Soviet's intense interest in psychological problems. In studying the reproductive mechanisms of biological systems, one of the main problems is how to explain the existence of an absolutely adequate "image of itself" inside the system, and how to avoid logical paradoxes of self-reference. In describing psychological reflexion, the problem of adequacy between the image of the original and the original does not arise. The main problem is to find methods of registering the differences between the image and the original. Therefore, for a biologist, the problem of self-representation is connected with classical problems of self-reference, while for a psychologist it is connected with classical problems of the inadequacy of reflexion. This led to different intentions in constructing formalisms:

WEST

Adequate self-representation is postulated

Laws of self-representation are deduced

SOVIET UNION

Laws of self-representation are postulated

All possible morphisms are considered

Limitations for self-representation are deduced

3. Formalisms

In Western cybernetics, the most well known attempt to construct a formal calculation for the description of self-reference belongs to Francisco Varela (1975), who modernized Spencer Brown's "Laws of Forms" (1969). The system of axioms was chosen in such a way that self-reference would exist. The Universum hidden behind this system of axioms is a sheet of paper on which an individual-operator-operand, , is living and capable of existing in copies and forming various flat configurations. The rules for "equivalent" transformations are given in such a way that the "equality" which is interpreted as the "realization" of self-reference is achieved.

My representation of systems with reflexion was given in the book Conflicting Structures (Lefebvre, 1967, 1973). Briefly, the formalization is as follows. Symbols T , x , y , z , $+$, $($, and $)$ are introduced. T stands for "reality", x , y , z , are interacting individuals; $+$ is a symbol for the integration of the elements; and the parentheses are used for the separation of "inner worlds". The Universum (including individuals who reflect it) is represented with a special polynomial. For example, at the time to the Universum was:

(0) $S_0 = T$, that is, the "reality" from an external observer's point of view.

Then, at time t_1 , individual X "becomes aware" of the Universum:

(1) $S_1 = S_0 + S_0 x = T + Tx$, where Tx is the reality T from X 's point of view.

At time t_2 , individual Y performs an act of awareness:

(2) $S_2 = S_1 + S_1 y = T + Tx + (T + Tx)y$,

where $(T + Tx)y$ means that Y has an image of reality (T) and image of reality from X 's point of view (Tx).

And, at time t_3 , individual Z performs his act of awareness:

(3) $S_3 = S_2 + S_2 z = T + Tx + (T + Tx)y + (T + Tx + (T + Tx)y)z$,

where $(T + Tx + (T + Tx)y)z$ means that Z has an image of $T + Tx$ and also of $T + Tx$ from Y 's point of view.

Now we can pose a question about the formal rules for the transformations of the Universum from one state to another in the above example. These transformations can be described as procedures of multiplying polynomials with Boolean coefficients:

$$S_1 = T(1 + x)$$

$$S_2 = T(1 + x)(1 + y)$$

$$S_3 = T(1 + x)(1 + y)(1 + z).$$

Thus, we have polynomials of two types: those describing the states of reflexive systems and those describing the operation of awareness. (A detailed description of these problems is given in my book *Structure of Awareness*, 1977, which is the translation of a revised version of *Conflicting Structures*.) Let us compare the expressions that depict elementary acts of self-representation in laws of form and reflexive analysis.

Laws of Form

$$\neg =$$

Reflexive Analysis

$$Txx$$

In laws of form, this elementary act is connected to a procedure of calculation. In reflexive analysis, there is no such procedure. As a consequence, each configuration in laws of forms has its own value, but a polynomial representing the reflexive system does not. On the other hand, the syntactical structure of a formula in reflexive analysis has its own psychological interpretation: Txx is “ Tx from X 's point of view”, but \neg has no biological interpretation.

Therefore, in the framework of Western cybernetics, the dominant idea in studying systems with self-representation became the idea of computation, and in the Soviet Union, the dominant idea became that of structure.

4. Cybernetic cube

To represent cybernetics as an integral area of research, I will construct a “space” of cybernetics using a cube, three edges of which are three fundamental “ideas-coordinates”: structure (X), computation (Y), and reflexion (Z).

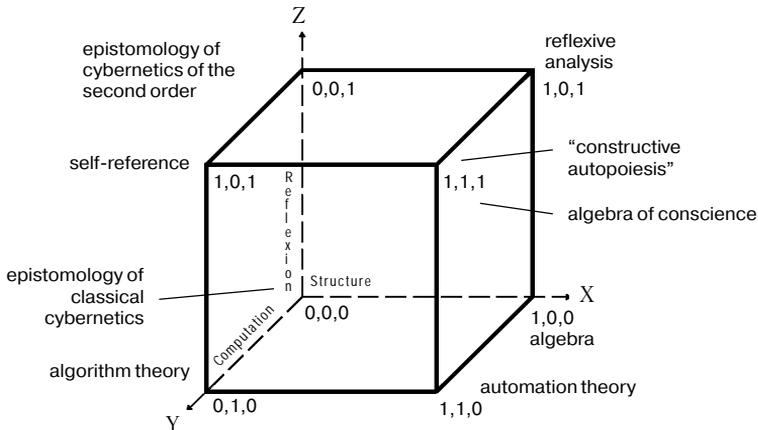


Fig. 2

1. Traditional cybernetics corresponds to face XY . It shows the joining of ideas of structure and computation in different ways: general epistemological problems (0,0,0) of algebra (1,0,0), algorithm theory (0,1,0) and automaton theory (1,1,0). In this area no significant differences between Soviet and American cybernetics exist.

2. The problems related to self-reference lie on face YZ . The concept of structure does not have an “ontological reference” to this area (it is not used for the representation of anything which differs from the process of

computation). This area is well developed in American cybernetics and not at all developed in Soviet cybernetics.

3. Reflexive analysis corresponds to face XZ. There, the concept of computation does not have an ontological reference distinct from the procedure of structures transformation. This area is well developed in Soviet cybernetics and undeveloped in American cybernetics.

4. Second order cybernetics lies on the upper face. But American and Soviet branches are developed on different edges of the cube and they complement each other.

5. Point (1,1,1) corresponds to the synthesis of all three fundamental concepts. We can find here automata with semantics which have biological or psychological interpretations.

Thus, the appearance of second order cybernetics is the appearance of a new dimension - reflexion. However, this dimension was developed differently in the Soviet Union and the West. In the Soviet Union, the idea of reflexion was combined with the idea of structure; as a result, reflexive analysis appeared. In the West, the idea of reflexion was combined with the idea of computation; as a result, calculations with self-reference appeared.

5. Synthesis

The cybernetic cube allows us to predict the future development of cybernetics: the synthesis of all the three ideas – structure, computation, and reflexion. I have made a first step in this direction by developing an “algebra of conscience”. Its main idea can be seen in the following figure: The outer oval *a* is an individual who has images of himself (inner *a*), of his partner (inner *b*), and of their relationship (symbol +). The images also can

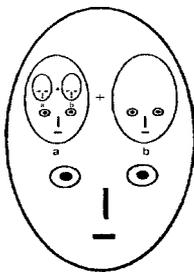


Рис. 3

have images (the smaller ovals), and so on. All together they constitute a reflexive structure. This structure is isomorphic to an exponential formula

$$a^{a+b}$$

which on the other hand represents a function. Thus, we have a graphic object (a formula) that combines a structure which can be interpreted and a procedure of computation. This method allows us to describe both the structure of an individual's cognition and his behavior at the same time. (For details, see *Lefebvre, 1982.*)

Another step toward the synthesis of the three main ideas in cybernetics has been made by Varela (1979), Maturana and Varela (1980), and Zeleny (1980) in their development of the theory of autopoiesis, especially the part related to the modeling of biological systems.

The branches of second order cybernetics developed in the Soviet Union and the West are, as we mentioned, complementary. Consequently, the synthesis of the three ideas: structure, computation, and reflexion will also constitute the synthesis of Soviet and Western cybernetics.

References

- Baranov, P.V. and A.F.Trudoliubov, 1969a*, Ob odnoi igre cheloveka s avtomatom, provo-
diashchim refleksivnoe upravlenie (On a game between ci human subject and an automa-
ton exercising reflexive control), *Problemy Evristiki, Vysshaya Shkola, Moscow*.
- Baranov, P.V. and A.K.Trudoliubov, 1969b*, O vozmozhnosti sozdania skhetny refleksivnogo
upravlenia, nezavisimoy ot suzheta eksperimentalno-igrovoy situatsii (On the possibility of
constructing a scheme of reflexive control independent from game-experimental situa-
tion), *Problemy Evristiki, Vysshaya Shkola, Moscow*.
- Baranov, P.V., 1976*, Refleksivnoe upravlenie i refleksivnaya structure resheny v igrakh
dvukh lits so strogim sopernichestvom (Reflexive control and reflexive structure of deci-
sions in two person games with strong rivalry). *Problemy Priniatia Resheny, Moscow*.
- Baranov, P.V. and A.F.Trudoliubov, 1977*, Refleksivnye protsessy v igrakh na setiakh zavis-
imostey (Reflexive processes in games on graphs). *Veroyatnostnoe Prognozirovanie v
Deyatelnosti Cheloveka, Moscow*.
- Druzhinin, V.V. and D.S.Kontorov, 1972*, "Idea, Algorithm, Reshenie" (Idea, Algorithm, De-
cision), Military Press, Moscow.
- Druzhinin, V.V. and D.S.Kontorov, 1976*, "Voprosy Voennoy Sistemotekhniki" (Problems
of Military System Design), Military Press, Moscow.
- Druzhinin, V.V. and D.S.Kontorov, 1982*, "Konfliktnaya Radiolokatsia" (Conflicting Radar
Detection), Radio i Sviaz, Moscow.
- Lefebvre, V.A., 1962*, O sposobakh predstavlenia ob'ektov kak sistem (On methods of
representing objects as systems), *Logika Nauchnogo Issledovania* (Theses of conference
papers), Kiev University Press.
- Lefebvre, V.A., 1965*, O samo-organizuyushchikhsia i samo-refleksivnykh sistemakh i ikh
issledovanii (On self-organizing and self-reflexive systems), *Problemy Issledovania Sistem
i Struktur*, Academy of Sciences Press, Moscow.
- Lefebvre, V.A., 1967*, "Konfliktuyushchie Struktury" (Conflicting Structures), Moscow,
Vysshaya Shkola: second edition: 1973, Sovetskoe Radio, Moscow.
- Lefebvre, V.A. and G.L.Smoljan, 1969a*, Algebraische Darstellung mensch-licher Konf-
liktsituationen, *Ideen des exakten Wissens*, No. 1.
- Lefebvre, V.A., 1969b*, Janus-Kosmologie, *Ideen des exakten Wissens*, No.6.
- Lefebvre, V.A., 1970*, Das System im System, *Ideen des exakten Wissens*, No.10.
- Lefebvre, V.A., 1972*, A Formal Method of Investigating Reflective Processes, *General Sys-
tems*, Vol.XVII.
- Lefebvre, V.A., 1973*, Auf dem Wege zur psychographischen Mathematik, *Ideen des ex-
akten Wissens*, No.6.
- Lefebvre, V.A., 1975*, Iconic Calculus: Symbols with Feeling in Mathematical Structures,
General Systems, Vol.XX.
- Lefebvre, V.A., 1977*, "The Structure of Awareness: Toward a Symbolic Language of Hu-
man Reflexion", SAGE Publications, Beverly Hills.
- Lefebvre, V.A., 1982*, "Algebra of Conscience: A Comparative Analysis of Western and So-
viet Ethical Systems", D. Reidel Publishing Company, Dordrecht, Holland.

- Lepsky, V.E., 1969*, Issledovanie refleksivnykh protsessov v eksperimente na matrichnoy igre s nul'voy summy (Investigation of reflexive processes in an experiment on a zero-sum matrix game), *Problemy Evristiki*, Vysshaya Shkola, Moscow.
- Maturana, H.R. and F.Varela, 1980*, "Autopoiesis and Cognition: The Realization of the Living", D. Reidel, Holland.
- Schreider, Yu.A., 1973*, K postroeniuyu yazyka opisaniya sistem (On the construction of the language of systems description), *Sistemnye Issledovaniya*, Nauka, Moscow.
- Schreider, Yu.A., 1975*, Slozhnye sistemy i kosmologicheskie printsipy (Complex systems and cosmological principles), *Sistemnye Issledovaniya*, Nauka, Moscow.
- Schreider, Yu.A., 1983*, Osobennosti opisaniya slozhnykh sistem (Peculiarities of complex systems description), *Sistemnye Issledovaniya*, Moscow.
- Spencer Brown, G., 1969*, "Laws of Form", George Allen and Unwin, London.
- Toom, A.L., 1973*, Sposoby priniatiya resheny v odnom klasse igr (Analysis of decision making in a special class of games), *Izvestia AN SSSR. Tekhnicheskaya Kibernetika*, No.3.
- Toom, A.L. and A.F.Trudoliubov, 1974*, Reflexive Wechselbeziehungen im Kol-ektiv, *Ideen des exakten Wissens*, No.3.
- Toom, A.L., 1976*, Nesimmetrichnaya kotnunikatsiya, fokalizatsiya i upravlenie v igrakh (Non-symmetrical communication, focalization, and control in games), *Semiotika i Informatika*, Moscow, No.7.
- Toom, A.L., 1978*, O roli znakovoi situatsii v igrakh (On the role of the semiotic situation in games), *Semiotika i Informatika*, Moscow, No.10.
- Toom, A.L. 1981*, Na puti k refleksivnomu analizu khudozhestvennoy prozy (Toward reflexive analysis of fictional prose), *Semiotika i Informatika*, Moscow, No.17.
- Trudoliubov, A.F., 1972*, "Resheniya na setiakh zavisimostei i refleksivnye mnogochleny" (Decisions on graphs and reflexive polynomials), *IV simposium po Kibernetike*, Tbilisi.
- Varela, F., 1975*, A Calculus for Self-Reference, *Int.J.Gen.Systems*, Vol.2.
- Varela, F., 1979*, "Principles of Biological Autonomy", North Holland, New York.
- von Foerster, H., 1981*, "Observing Systems", Intersystems Publications, USA.
- Zeleny, M., ed., 1980*, "Autopoiesis, Dissipative Structures, and Spontaneous Social Orders", Western Press, Boulder Co.

Dialog between V.Lefebvre and S.Beer

Beer: Regarding the distinction between psychological and logical self-reference, I always wonder about that difference. You (turning to Lefebvre) talked about it. I have never been in Russia; I bumped into this problem in a series of meetings we organized on self-reference. It is very strange that there is an incompatibility there. Some people will approach self-reference in a logical way, and some other people will approach it in a psychological way. I find it very difficult ever to get that discussion to merge. So I would be interested how you think the two relate to each other?

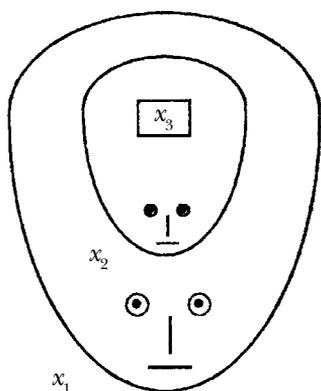
THE LAW OF SELF-REFLEXION: A Possible Unified Explanation for the Three Different Psychological Phenomena

© V.A. Lefebvre (USA)
University of California, Irvine, USA,
Professor

Abstract

The centuries-old philosophical idea that man has an image of the self containing an image of the self (of the second order) obtains a new life in the mathematical model of the subject possessing reflexion. One assumption underlying the model is that the subject tends to generate patterns of behavior such that some kind of similarity is established between the subject himself and his second order image of the self. We demonstrate that this model allows a single explanation for three diverse, experimentally observed phenomena: (a) the nonlinear relation between magnitude estimation and categorization of identical stimuli (Parducci, Stevens, Galanter), (b) the avoidance of the value of 0.5 in estimating stimuli equidistant from two samples on a psychological scale (Poulton, Simmonds), and (c) the formal correspondence between, on the one hand, frequency of choice for particular alternatives and, on the other, reinforcement rate, found in some experiments with animals and people (Herrnstein, Baum). The results obtained allow us to hypothesize that the reflexive metaphor represents a general principle for regulation of both human and animal behavior.

Beginning with John Locke, the human ability to represent mentally one's own thoughts and feelings has been a central topic of Western philosophy [1, 2]. This ability is conventionally called reflexion. The subject possessing reflexion can be depicted as a miniature human figure with the image of the self inside his head (Fig. 1). This image may contain



not only sees himself but also sees himself seeing himself. Although the idea of reflexion played an important role in nineteenth century psychology, it has not become part of mainstream psychology in the twentieth century. The main reason for this is that the concept of

Fig. 1. The subject with reflexion. Inside the subject's inner domain, there is an "image of the self" with its own inner domain. An "image of the self" is traditionally regarded as the result of the subject's conscious constructive activity. In the framework of the formal model of the subject with reflexion, the image of the self is not a product of human intellectual efforts, it is rather generated by the automatic work of the subject's cognitive mechanism [6, 13].

image of oneself has not been grounded either in clearly determined psychological phenomena nor in morphological or functional brain structure [3]. Nevertheless, the term ‘image of the self’ and others equivalent to it were broadly used in psychology of personality and social psychology, due to their practical convenience. The situation began to change in 1970s, when it became clear that the metaphors similar to the one in Fig. 1 can be expressed in the language of functions and so provide formal description of human behavior. This opened the prospect of linking the human introspective world with objectively observable behavior [4, 5, 6, 7, 8, 9, 10, 11, 12].

This finding allows us to assume that the structure of the inner domain given in Fig. 1 is a manifestation of work of a special cognitive mechanism of self-representation (possibly inborn), rather than a result of the intellectual efforts of the subject consciously thinking about the self [5, 6, 13].

We will demonstrate further how a model of the subject based on the reflexive metaphor allows us to suggest a unified explanation for three different psychological phenomena none of which has so far been explained convincingly.

A Function of Readiness

Let the subject face a choice between two alternatives: one of them plays the role of the positive pole for the subject and the other one that of the negative pole. Any bipolar opposition can serve as an example: good-evil, big-small, white-black [14, 15]. Variable X_1 corresponds to the subject defined on the interval $[0,1]$. The value of this variable is called the subject’s readiness to choose the positive pole. It can manifest itself in two ways: (a) as a frequency with which the subject chooses the positive alternative (under fixed condition); (b) as a dot on a scale $[0,1]$ indicated by the subject and reflecting his readiness to choose the positive alternative. The subject is represented by the following function:

$$X_1 = x_1 + (1 - x_1)(1 - x_2)x_3, \quad (1)$$

where $x_1, x_2, x_3 \in [0,1]$ [16]. Variable x_3 describes the subject’s intention to choose the positive pole. Thus, the model distinguishes between the objective readiness (X_1) of the subject’s executive system to make a choice and his subjective desire to do so (x_3). Variables x_1 and x_2 describe the environmental pressure on the subject toward choosing the positive pole: x_1 is an actual pressure in the framework of a given situation, and x_2 is the subject’s expectation of such pressure, as determined by his previous experience.

Each alternative possesses a degree of attractiveness for the subject, expressed in the units of some psychological scale. The pressure toward

the positive pole is connected with the alternative's attraction as

$$x_1 = (v_1)/(v_1 + v_2) \text{ and } x_2 = (u_1)/(u_1 + u_2),$$

where v_1 and v_2 represent objective attraction of the positive and negative alternative in a given situation, and u_1 and u_2 show the expected attraction of these alternatives. In general, the alternative's attraction does not depend on its polarity. A negative alternative may be more attractive, as in a case of giving in to a temptation instead of rejecting it. Function Eq.1 can be represented as a composition $X_1 = F(x_1, (F(x_2, x_3)))$. This representation is unique and $F(x_2, x_3) = 1 - x_3 + x_2x_3$ [16]. Function $F(x_2, x_3)$ can be interpreted as the subject's "image of the self". Under this interpretation, variable x_3 is the image of the self in the image of the self. We will call this image of the second-order the 'model' of the self. We see that, in addition to the subject's intention, the value of x_3 plays the role of the readiness of the model of the self to choose the positive pole. The structure of composition $F(x_1, (F(x_2, x_3)))$ corresponds to the metaphor in Fig.1.

The Law of Self-Reflexion

The manifest meaning of an intentional action is the subject's readiness to do what he intends to do. Variable X_1 corresponds to the subject's readiness, and variable x_3 to his desire. Thus, an intentional act corresponds to the condition $x_3 = X_1$, where X_1 represents the subject as a whole, and x_3 represents his model of the self. The condition $x_3 = X_1$ can be formulated as follows:

The subject tends to generate a pattern of behavior such that similarity is established and preserved between the subject and his model of the self.

For $x_3 = X_1$, Eq. 1 turns into

$$X_1 = \frac{x_1}{x_1 + x_2 - x_1x_2}, \quad (2)$$

where $x_1 + x_2 > 0$ [16]. Let us note that the condition of similarity allows us to eliminate variable x_3 , whose value is not instrumentally measurable.

Phenomenon 1. Non-linear Connection between Magnitude Estimation and Categorization of the Same Stimuli

Magnitude estimation is the choice of a number characterizing the intensity of a physical stimulus. For example, subjects are presented with a set of steel rods one by one and asked to estimate the length of each in inches. The data obtained from a large number of subjects allow experimenters to find a function G , which connects stimuli estimations with their objective physical measures. This function leads to the construction of a psychological scale of stimuli intensity. Categorization, on the other hand, classifies the stimuli according to their intensity. For example, the subjects are

shown the same steel rods as before, but here the task is to refer each of them to one of eleven categories: the shortest rod belongs to the first category, the longest one to the eleventh category, and all the others lie in between [17]. For a long time it was considered obvious that estimations obtained in these two kinds of experiments – magnitude and categorical – would be related linearly with each other. In the 1950’s it was found that this relation is non-linear [17]. It turned out also that the shape of a curve depends on the distribution of weak and strong stimuli in an experimental series: the more marked shift toward weak stimuli, the more convex the graph [18] (See Fig. 2a).

Let us now connect these observations with the function of readiness (Eq.2). We represent a categorical scale as a segment $[0,1]$, where the category of the strongest stimulus corresponds to point 1, playing the role of the positive pole, and the category of the weakest stimulus corresponds to point 0, playing the role of the negative pole.

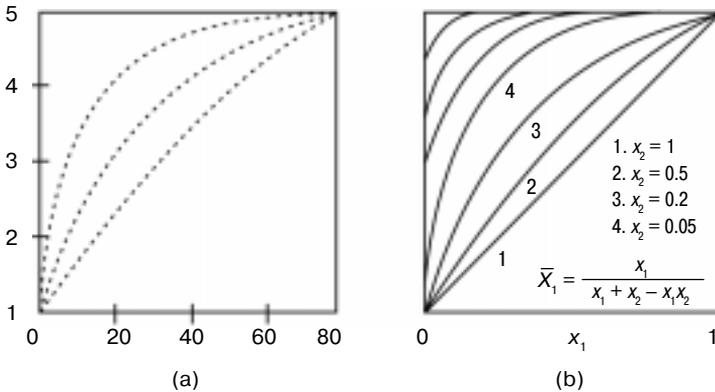


Fig. 2. Relation between magnitude estimation and categorization. (a) Categorization of rectangular areas (on five-point scale [16]): I – small stimuli more frequent; II – equal distribution; III – large stimuli more frequent. The vertical axis represents categorical scale; the horizontal axis corresponds to the area of rectangles measured in square inches [17]. (b) A family of hyperbolas $X_1 = (x_1)/(x_1 + x_2 - x_1x_2)$, where x_2 is a variable parameter [16].

All the other categories correspond to equidistant marks on this segment. We assume that the subject indicating point X_1 on the scale corresponds to a stimulus categorization (to within the nearest mark). Let G_{min} and G_{max} be the minimal and maximal intensities in a given experimental series (on the psychological scale). Then $v_1 = G - G_{min}$ and $v_2 = G_{max} - G$, where G is the intensity of the presented stimulus. It is easy to see that the greater G , the greater v_1 and the smaller v_2 . Thus,

$$x_1 = \frac{v_1}{v_1 + v_2} = \frac{G - G_{min}}{G_{max} - G_{min}}$$

Let a given stimulus be preceded by a sequence of stimuli with the mean value of intensity G^* . Let also $u_1 = G^* - G_{\min}$ and $u_2 = G_{\max} - G^*$, then

$$x_2 = \frac{u_1}{u_1 + u_2} = \frac{G^* - G_{\min}}{G_{\max} - G_{\min}}$$

For long randomized sequences of stimuli, x_2 will not change considerably after a series of presentations and can be considered constant. Under such conditions, Eq.2 turns into the equation of a hyperbola with variable x_1 and parameter x_2 [16]. A family of such hyperbolas is shown in Fig. 2b. Now we can explain the observations obtained during stimuli categorization:

(a) The connection between magnitude estimation and categorization is non-linear, because Eq.2 with constant x_2 corresponds to a hyperbola.

(b) The subjects overestimate the stimuli intensity in categorization by comparison with magnitude estimation, because hyperbolas are upward convex.

(c) When the intensity of stimuli is shifted toward the weakest values, the curve's convexity increases, because the value of parameter x_2 decreases.

The explanations currently existing for the entire set of the observations described above are based on the models containing a free parameter (19), while in the model based on Eq.2, there is no need for free parameters.

Phenomenon 2. Avoiding the Point 0.5 in Estimating Stimuli whose Intensity is Exactly in the Middle between Two Samples

This phenomenon was discovered by Poulton and Simmonds [20, 21, 22]. The subjects were asked to evaluate the degree of lightness of a gray piece of paper situated close to two samples, one black and one white. The degree of lightness of the gray sample was chosen to be exactly in the middle between the black and white samples on a psychological scale. Each subject received a 100mm scale, one end of which corresponded to the black sample, and the other to the white one. The experimenter recorded only the very first touch of a pencil to the scale. A sample of experimental data is shown in Fig. 3a: the graph has two peaks and a gap between them.

Let us link these experiments with Eq.2. Suppose that for one portion of the subjects, the white sample represents the positive pole, and for others, the black sample plays this role. The intensity of the gray sample lies exactly in the middle between the white and black ones, so that, $x_1 = 1/2$. Since only the very first touch of the pencil is registered, the subject's experience in making such estimations was limited to this one touch, so $x_2 = x_1 = 1/2$. By substituting these values into Eq. 2, we find that $X_1 = 2/3$. For the subjects,

whose positive pole is the white sample, estimations will group at $2/3$ of the distance from the left-hand end of the scale, i.e. around the point $2/3$; for those, whose positive pole is the black sample, the estimations will group at the point located $2/3$ of the distance from the right-hand end, i.e., around the point $1/3$. As a result we obtain the two-humped distribution shown in Fig. 3b.

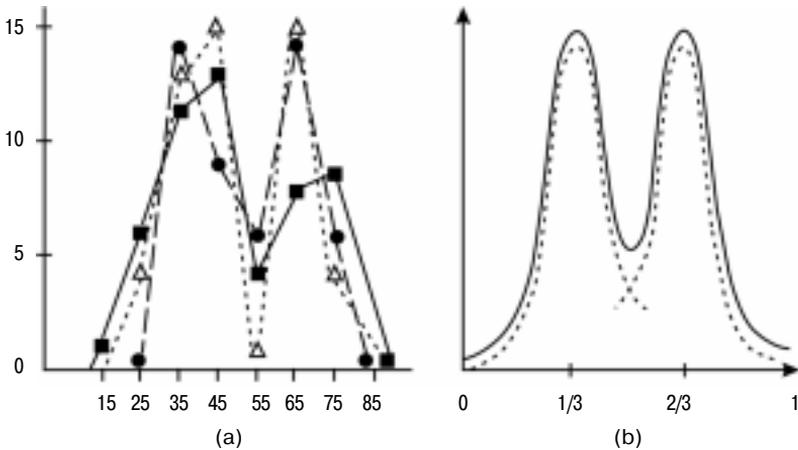


Fig. 3. Avoidance of the middle of the scale in estimation of stimuli intensity. The horizontal axis corresponds to a 100mm scale; the vertical one to the number of marks. (a) A sample of experimental distribution for three groups of subjects [20]. (b) The distribution based on the reflexive model [16].

The only other explanation for this phenomenon assumes the existence of a shift of the scale's initial point, which is equivalent to introducing free parameters [21]. There is no free parameters in Eq.2, with the help of which we explained this phenomenon, but there is the assumption that portion of the subjects has one orientation for the scale, and the other portion has an opposite orientation.

Phenomenon 3. Matching Law

This phenomenon, discovered by Herrnstein in the early 1960s, manifests itself in experiments with birds and rats as well as in experiments with human beings [23, 24, 25]. A standard experiment of this type proceeds as follows. Two keys connected with a food hopper are placed in a cage with a pigeon. A peck by the pigeon on either key may cause the appearance of a small piece of food. For each key, there is a special program of reinforcement which may be changed over the course of the experiment. For example, reinforcements may appear randomly, but a pigeon must make k pecks, on average, on one key to receive one grain. By varying the rein-

forcement programs for each key, experimenters succeeded in changing the frequencies of pecks by the pigeon on different keys. Analyzing the experimental data, Herrnstein found that the ratio $(N_2/N_1) = (n_2/n_1)$ holds; N_1 and N_2 being the numbers of pecks at each key, and n_1 and n_2 the numbers of reinforcements related to the corresponding keys. A more precise law was formulated by Baum in the middle 1970s:

$$\frac{N_2}{N_1} = p \frac{n_2^s}{n_1^s}, \quad (3)$$

where p and s are free parameters whose values may differ for different subjects [26, 27]. In many experiments the value of s is close to 1.

Let us now link Eq. 3 with the function of readiness for the case of $s = 1$. Without compromising the generality of our reasoning, we choose the keys numeration in such a way that $p \in 1$. Eq.2 can be rewritten as

$$\frac{1 - X_1}{X_1} = x_2 \frac{1 - x_1}{x_1}, \quad (4)$$

where $x_1 > 0$. Let $X_1 = \frac{N_1}{N_1 + N_2}$, $x_1 = \frac{n_1}{n_1 + n_2}$, and $x_2 = \frac{u_1}{u_1 + u_2}$, where u_1

is an expected subjective attraction of the first key and u_2 that of the second. According to the reflexive model, in the first phase of the experiment there occurs a polarization of the keys (for each subject): one of them takes on the role of the positive pole, the other that of the negative pole. At the same time, the expected attractions, u_1 , u_2 , are formed, as well as the value of x_2 which plays the role of p in Eq.3. We see that the law of reflexivity allows us to obtain Eq.3 and provide parameter p with a psychological interpretation for the case when $S = 1$ [28].

Unlike phenomena 1 and 2, the matching law is not connected with the subject's estimating activity, but rather with his economical behavior. It seems natural to assume that this law reflects the tendency of an organism to obtain as much utility as possible. This idea underlies most attempts to explain this phenomenon, although Heyman and Luce demonstrate that the matching law is not a logical consequence of maximizing reinforcement rate [29]. Nevertheless, many researcher do not rule out the possibility that the subject seeks to maximize utility understood in broader sense [30]. For example, the subject may try to shorten the run between a key and the food hopper or save the energy needed to operate with the key, and so forth. Baum and Apparacio mention this topic, "Despite claims to the contrary, all leading theories about operant choice may be seen as model of optimality." [31, p. 75]. The idea of maximizing utility values, however, has not helped researchers to deduce Eq.3 [32].

The reflexive model provides us with another possible explanation for the matching law: Eq.3 holds not because the subject tends to obtain more utility of any kind, but because he generates a pattern of behavior such that the relation of similarity between the subject and his model of the self is established and sustained.

If the reflexive model could explain why it is necessary to introduce a free parameter s into Eq.3, this would become an important step forward toward substantiating this hypothesis.

References and Notes

1. *J. Locke*. An Essay Concerning Human Understanding (1690). Amherst: Prometheus Books (1995).
2. *E. Cassirer*. The Philosophy of the Enlightenment. Princeton NJ: Princeton University Press (1951).
3. *P. S. Churchland*. Self-Representation in Nervous Systems. *Science*, 296, 308 (2002).
4. *V. A. Lefebvre*. A Formal Approach to the Problems of Good and Evil. *General Systems*, 22, 183 (1977).
5. *V. A. Lefebvre*. An Algebraic Model of Ethical Cognition. *Journal of Mathematical Psychology*, 22, 83 (1980).
6. *V. A. Lefebvre*. Algebra of Conscience, Dordrecht: D.Reidel (1982). Second enlarged edition, Dordrecht: Kluwer (2001).
7. *J. Adams-Webber*. Comment on Lefebvre's Model from the Perspective of Personal Construct Theory. *Journal of Social and Biological Structures*, 10, 177 (1987).
8. *J. A. Schreider*. Fuzzy Sets and the Structure of Human Reflexion. *Applied Ergonomics*, 1, 19 (1994).
9. *V. Yu. Krylov*. On One Model of Reflexive Behavior Distinct from Lefebvre's Model. *Applied Ergonomics*, 1, 21 (1994).
10. *J. Adams-Webber*. Self-Reflexion in Evaluating Others. *American Journal of Psychology*, 110, 527 (1997).
11. *L. D. Miller & M. F. Sulkoski*. Reflexive Model of Human Behavior. Proceedings of Workshop on Multi-Reflexive Models of Agent Behavior, Los Alamos: Army Research Laboratory (1998).
12. *T. A. Taran*. Many-Valued Boolean Model of the Reflexive Agent. *Multi-Valued Logic*, 7, 97 (2001).
13. *V. A. Lefebvre*. The Golden Section and an Algebraic Model of Ethical Cognition. *Journal of Mathematical Psychology*, 29, 289 (1985).
14. *G. A. Kelly*. The Psychology of Personal Constructs, New York: Norton (1955).
15. *C. E. Osgood, G. J. Suci, & P. H. Tannenbaum*. The Measurement of Meaning, Urbana, IL: University of Illinois Press (1957).
16. *V. A. Lefebvre*. A Psychological Theory of Bipolarity and Reflexivity, Lewiston: The Edwin Mellen Press (1992).
17. *S. S. Stevens & E. H. Galanter*. Ratio Scales and Category Scales for a Dozen Perceptual Continua. *Journal of Experimental Psychology*, 54, 377 (1957).
18. *A. Parducci*. Direction of Shift in the Judgment of Single Stimuli. *Journal of Experimental Psychology*, 51, 169 (1956).
19. *A. Parducci*. Category Judgment: A Range-Frequency Model. *Psychological Review*, 72, 407 (1965).

20. *E. C. Poulton, D. C. V. Simmonds, R. M. Warren.* Response Bias in Very First Judgments of the Reflectance of Grays. *Perception & Psychophysics*, 3(2A), 112 (1968).
21. *E. C. Poulton & D. C. V. Simmonds.* Subjective Zeros, Subjectively Equal Stimulus Spacing, and Contraction Biases in Very First Judgments of Lightness. *Perception & Psychophysics*, 37, 420 (1985).
22. *E. C. Poulton.* Bias in Quantifying Judgments, NJ: Erlbaum (1989).
23. *R. J. Herrnstein.* Relative and Absolute Strength of Response as a Function of Frequency Reinforcement. *Journal of the Experimental Analysis of Behavior*, 4, 267 (1961).
24. *G. M. Heyman & R. J. Herrnstein.* More on Concurrent Interval-Ratio Schedule: A Replication and Review. *Journal of the Experimental Analysis of Behavior*, 46, 331 (1986).
25. *B. A. Williams.* Reinforcement, Choice, and Response Strength. In: R. C. Atkinson, R. J. Herrnstein, G. Lindzey, & R. D. Luce (Eds.), *Steven's Handbook of Experimental Psychology* (Vol.2), New York: John Wiley & Sons (1988).
26. *W. M. Baum.* On Two Types of Deviation from the Matching Law: Bias and Undermatching. *Journal of the Experimental Analysis of Behavior*, 22, 231 (1974).
27. *W. M. Baum.* Matching, Undermatching, and Overmatching in Studies of Choice. *Journal of the Experimental Analysis of Behavior*, 32, 269 (1979).
28. *V. A. Lefebvre.* Categorization, Operant Matching, and Moral Choice. Institute for Mathematical and Behavioral Sciences, MBS, 99-14, UCI (1999).
29. *G. M. Heyman & R. D. Luce.* Operant Matching Is Not a Logical Consequence of Maximizing Reinforcement Rate. *Animal Learning Behavior*, 7, 133 (1979).
30. *D. W. Stephens & J. R. Krebs.* Foraging Theory, Princeton, NJ: Princeton University Press (1986).
31. *W. M. Baum & C. F. Aparicio.* Optimality and Concurrent Variable-Interval Variable-Ratio Schedule. *Journal of the Experimental Analysis of Behavior*, 71, 75 (1999).
32. *G. M. Heyman.* Optimization Theory: A Too Narrow Path. *Behavioral and Brain Sciences*, 11, 136 (1988).

REPRESENTATION OF THE PRINCIPLES OF REFLEXIVE CONTROL IN MATHEMATICAL MODELS OF REFLEXIVE CHOICE

© T.A.Taran (*Ukraine*)



National Technical University of Ukraine "KPI",
Professor,
Doctor of Technical Sciences

Human actions are hard to predict, but in every-day situations one usually follows some stable behavioural patterns. Those patterns build up from the individual experience that forms the unique cognitive structures within one's personality. But people living in a social environment alongside with the individual structure have a collective one. Social environment sets cultural norms of conduct that form the universally accepted system of values. Therefore in spite of individual differences people who find themselves in a same situation behave similarly in a certain degree, which is predetermined by the norms accepted within that social environment. The normative patterns imposed by means of culture give the opportunity to forecast people's behaviour in some given situations. The level of that predictability is not sufficient enough to predict somebody else's destiny, but adequate to forecast the every-day life [1].

Psychology distinguishes between two ways of human existence: reactive and reflexive [2]. In case of the first one the individual lives within a world of immediate ties and doesn't go beyond their borders. Under the 2nd option he trespasses beyond the trite habits after having recognised the essence of his usual way of living and thus having developed a new attitude towards it. That way of quitting the habitual life doesn't always change an individual's life for the better; a good example of it is living in a totalitarian sects where a individual wittingly embraces the norms that differ from the commonly accepted ones, and continues to use them in his life. In reference source [3] we studied the typical mechanisms of reflexive control used in a totalitarian sect and devices through which the strange norms of living are imposed on their members.

This work is based on the mathematical models [4-8] that describe the reflexive behaviour of a subject in a situation of choice. The formal analysis of a mathematical model gives a chance to figure out the main principles of reflexive control: the interpretation of those principles agrees with the results of the psychological research of reflexive behaviour. The interpretation of the formal results allows us to find out what individuals are more prone to outer influence, and who are less prone to that; how individual's self-esteem and human experience influence the degree of reflexive programming and control that he can sustain. Specifically, the models of reflexive choice can help us see the difference between reflexive programming and control.

Multivalued Boolean systems of norms

Let us study the reflexive model of normal behaviour [7, 9], under which we understand the behaviour dictated by a given system of cultural norms. The system of norms is build in the following way [7, 8]. There is a set of alternative actions among which the subject is to choose. Each alternative can be placed on the scale with positive and negative poles representing a set of bipolar constructs. Presumably, positive pole (1) corresponds to a given Norm, while the negative pole (0) corresponds to its opposite which can be called Anti-norm. For instance, on the scale "profitable-unprofitable", "profitable" would be the positive pole and "unprofitable" would be the negative one; on the scale "honest-dishonest", "honest" is the positive pole, "dishonest" is the negative pole. Thus the binary choice between the poles (1 and 0) can be interpreted as a choice between Norm and Anti-norm.

Descartes' product of those scales is a partially ordered set of different combinations of Norms and Anti-norms. Those combinations can be called weak norms. If each Norm is 1 and each Anti-norm is 0, than each of the weak norms corresponds to a Boolean vector. So: the weak norm "profitable-dishonest" corresponds to the vector (1,0), while "unprofitable-honest" is (0,1). The combination of only positive poles can be called general Norm (in the given example "profitable-honest", and the combination of only negative poles can be called general Anti-norm ("unprofitable-dishonest"). Such ordered set forms a Boolean lattice $\langle L, \leq \rangle$, where the general Norm equals one ($\sup L = I$), while the general Anti-norm equals 0 of the lattice ($\inf L = 0$). The rest of the values weak forms $x \in L$ lie in between Anti-norm and Norm $0 < x < I$.

The ratio of the order $x \leq y$ for a set of weak norms will be interpreted as: norm x is a weaker norm than norm y , or norm y is a stronger norm than norm x . Thus general Norm in the strongest norm of all. The logic of norm [9] can be positioned on such lattice. This logic of norms can be isomor-

phic with the multivalued Boolean logic $B_n = \langle L, \vee, \&, \neg \rangle$ with the operations of disjunction $x \vee y \equiv \sup\{x, y\}$ and conjunction $x \& y \equiv \inf\{x, y\}$, where $x, y \in L$. The operation of negation $\neg x$ corresponds to complement x on lattice L .

The isolated true value of the logic of norms is Norm: I . The value of implication $x \rightarrow y$ is determined as the uppermost margin of values $\neg x, y$: $x \rightarrow y = \neg x \vee y = \sup\{\neg x, y\}$. Implication will equal I whenever $x \leq y$:

$$|x \rightarrow y| = I \text{ if and only if } x \leq y.$$

Each action the subject can choose has a certain value on the scale of norms¹ (estimation). Model of the reflexive behaviour reflects the subject's readiness to choose an action that satisfies a determined sub-set of norms. Therefore herein after the term "alternative" will be used for any (weak) norm on the Boolean scale of norms. The introduction of multivalued estimations, each having inverse estimation on the Boolean lattice of norms gives the opportunity to research certain peculiarities of the alternative choice. The main idea of the research [9] is mechanism of the influence of a psychological set on forming subject's intentions, conditions under which subject's expectations about the outer world (environment) come true, influence of self-esteem on subject's choice, and conditions under which subject's choice is determined by the pressure of the environment (outer pressure, influence). Those results let us consider the readiness of the subject to choose one or another alternative and his level of freedom, and forecast the subject's behaviour basing on those data. Predictability gives the opportunity to control. In the present work we would like to scrutinise the produced results from the point of view of controllability.

Model of reflexive choice

The basic results of the research of the multivalued Boolean model of reflexive choice are the following [9]. A subject, who needs to make a choice in a multitude of options, is studied. Behind each of his action a number of considerations stand: advantage, gain, profitability, security as well as moral values, such as good and evil, honesty and dishonesty, etc. The value of those considerations is estimated in the model on the scale of norms. The function of the subject's readiness to choose can be represented in the following way [6]:

$$A1 = (a3 \rightarrow a2) \rightarrow a1. \quad (1)$$

Variable $a1$ stands for the real pressure of the environment on the subject to choose one or another alternative. This pressure of the environ-

¹ Representation set of actions => set of norms, where set of norm is Boolean lattice can be viewed as a fuzzy set with accessory function. Still, we would not like to stick to the terminology of fuzzy sets, taking but operations with accessory functions into consideration.

ment is not realised by the subject, but influences him of the subconscious level. The subject's notion about the pressure of the environment is described by variable a_2 . This is his psychological set based on the previous experience of the subject and it results in certain expectations of the outer world in the given situation. Variable a_3 corresponds to the subject's plans to choose a certain alternative, his intentions that he wants to realise. A_1 is the alternative (estimation of the action on the scale of norms) that subject is ready to choose.

Let's assume that the variables in the equation (1) can be represented by any value on the Boolean lattice of norms $\langle L, \leq \rangle$ independently from each other: $A_1, a_3, a_2, a_1 \in L$. Expression $A_2 = (a_3 \rightarrow a_2)$ in the equation (1) is interpreted as subject A's "self-image", his self-esteem. If the subject does not have any plans or intentions, than his readiness to choose A_1 doesn't depend on a_3 ; it is represented in formula $a_2 \rightarrow a_1$, and is called *primitive choice*.

If the readiness of the subject to make a certain choice matches his intentions $A_1 = a_3$, it is called *realistic choice* [4]. In this case the subject makes his choice wittingly, in accordance with his own intentions and can turn his plans into actions. For reflexive control of the subject it is required that his intentions should match the pressure of the environment, in which case he would deliberately embrace the choice which environment encourages him to make.

The options of realistic choice are determined by the following polynomial:

$$(a_3 \rightarrow a_2) \rightarrow a_1 = a_3. \quad (2)$$

It means that in case of realistic choice subject's intentions depend only on the expected and real pressure of the environment, $a_3 = f(a_1, a_2)$. In other words the environment and the psychological set (expected pressure from without) of the subject form his intentions that he can realise.

In source [7] it is proved that the subject has an opportunity to make a realistic choice if his intentions lie in between the real pressure of the environment and the primitive choice:

$$a_1 \leq a_3 \leq a_2 \rightarrow a_1. \quad (3)$$

In source [9] the same result was achieved due to the subject's readiness to choose the strongest norm of all those available in the given situation. The results lead us to the conclusion: *if an individual wishes to behave most properly, he makes the realistic choice*.

This conclusion is in accordance with the basic conception of Kelly's personal construct psychology: *the human psychological processes go along the channels via which he can anticipate future events* [11]. In his instinctive longing to avoid disappointment, frustration, troubles and suffering he

seeks to look into the future. Each time he has to choose, he favours the alternative that could provide the best opportunities for him to anticipate the future. The choice can be unambiguous or can allow some uncertainty to be resolved later. These two options distinguish the field of realistic choice: an individual can give in to the pressure of the environment or choose a stronger alternative, that still does not exceed the primitive choice he made taking his estimations into consideration.

In fact, equation (3) makes it clear that the best realistic choice the subject can make is determined by the primitive choice:

$$a3 = a2 \rightarrow a1 = \neg a2 \vee a1 = \sup \{\neg a2, a1\},$$

or by the strongest norm out of $\neg a2$ and $a1$. Therefore, the subject expecting pressure of the environment $a2$, considers the opposite option $\neg a2$ and chooses the best alternative out of $\neg a2$ and $a1$.

This result agrees with Kelly's statement on interpretation: each individual anticipates the events by interpreting their repetitions [11]. The mentioned interpreting means considering events and things in the way in which they start to make sense for him. The easiest thing an individual can do in a given situation is to give in to the pressure of the environment (reactive way). But his longing to change his situation for the better leads to the possibility of several other choices.

In our model the options are determined by the outer pressure as well as by the psychological set of the subject, his past experience. Variable $a2$, which is the subject's psychological set, represents in particular how the subject interprets the pressure of the environment. This interpretation is based on his experience and it may contain some positive as well as negative estimations of the events.

An individual notices which signs are distinctive of this pressure and which never accompany it. Thus he finds the corresponding value (estimation) on the scale of norms. The main procedures in the interpretation are finding likeness and difference. In an attempt to anticipate the developments to avoid troubles the subject thinks about the possibility of alternative developments. He creates constructs figuring out the similar and contradicting elements. Such bipolar constructs act as lattices upon which system of norms is built.

Therefore, facing the challenge of choosing, an individual considers two opposite estimations. If one of them $a2$ (the one that he favours) is positive for him, while the opposite $\neg a2$ is negative. Often it reflects his worries and fears, shows what result of the choice he would consider undesirable. Out of two disasters he chooses the least harmful: the alternative that is stronger ("better") on the scale of norms.

For two incomparable elements $\neg a2$ and $a2$ the primitive choice will be any weak norm z that is, however, stronger than both other norms $\neg a2 < z$

and $a1 < z$. In other words in this case the subject seeks such alternative that would be stronger than $\neg a2$ and $a1$ on his scale of norms. It gives him a **limited freedom of choice**: if $a1 < a2 \rightarrow a1$, then he can realise any intention: from giving in to the pressure of the environment to the primitive choice. Any intention in between lower margin $a1$ and upper margin $a2 \rightarrow a1$ (primitive choice) can be fulfilled.

If the environment encourages the subject to choose Anti-norm, while the primitive norm is the choice of Norm, the subject has the **full freedom of choice**: $0 \leq a3 \leq I$. Apparently, the full freedom of choice on the Boolean lattice of norms is possible only provided $a1 = 0$ and $a2 = 0$. The full freedom of choice is the uncertainty of choice: the choice of the subject is unpredictable.

If the primitive choice of the subject matches the pressure of the environment: $a1 = a2 \rightarrow a$, then the realistic choice is determined by the influence of the environment: $a1 = a3$. In this case the subject deliberately gives in to the pressure of the outer world: he produces intentions that match that pressure.

Normative behaviour

Value $A1 = I$ means that the subject is ready to choose Norm, best possible alternative. When the subject chooses common Norm on the Boolean lattice of norms, it is the situation of *normative behaviour*. In our model if the environment forces the subject to choose Norm: $a1 = I$, then the subject starts to favour such choice: $(a3 \rightarrow a2) \rightarrow I = I$ (since every value $a3 \rightarrow a2 \leq I$). The subject is always ready to choose Norm if the environment encourages him to do so. Furthermore, according to the definition of implication, $(a3 \rightarrow a2) \rightarrow a1 = I$ only in case if $a3 \rightarrow a2 \leq a1$, that is the pressure of the environment doesn't always equal Norm: the subject favours Norm whenever his self-esteem ($a3 \rightarrow a2$) is adequate or lower than the pressure of the environment. Therefore we may conclude:

Axiom of the choice of Norm: A subject is always ready to choose Norm if his self-esteem is lower than or adequate to the influence of the environment.

Still, if the subject's self-esteem is higher than the pressure of the environment: $a3 \rightarrow a2 > a1$, then $A1 \neq I$ – he is not ready to choose Norm, and therefore he is more prone to act in accord with circumstances. In fact, if $a3 \rightarrow a2 = I$ and $a1 \neq I$, then $A1 = a1$ – the subject who has “ordinary” self-esteem is always ready to give in to the pressure of the environment.

The self-esteem of the subject depends on his wishes and expectations: $a3 \rightarrow a2$. If $a3 \leq a2$, that is when his wishes do not surpass his expectations, than his self-esteem equals Norm $a3 \rightarrow a2 = I$. Most probably the subject whose wishes do not surpass his expectations has the self-esteem of an

“ordinary person” (accustomed to act in a stable environment that he knows well: he knows what to expect from the outer world and desires nothing more. Such subject is more prone to submission even if the environment suggests inadequate (unexpected, undesirable) alternatives. He is unable to choose Norm unless there’s pressure forcing him to do so.

Therefore, normative behaviour is characteristic of the subjects with the self-esteem which is adequate ($a3 \rightarrow a2 = a1$) or lower than the pressure of the environment. In the first situation the subject will be able to evaluate his actions giving in to the circumstances, he is accurate in estimating the situation and his potential. Disregarding the situation of adequacy, we arrive to the conclusion that a subject with a low (depressed) self-esteem is more likely to choose Norm than a subject with a high (elevated) self-esteem.

This result may seem strange at first: **people with low self-esteem tend to follow Norm in their behaviour.** It is though in full accordance with the teaching of ethics. According to source [12] the feeling of righteousness is perceived by the subject as a benefit and contributes to moral comfort by means of instilling a positive self-esteem in the subject. “Actually, it is something more: a positive self-esteem is just a subjective manifestation of reaching one’s own goals of self-perfection, which according to all the ethical teaching is the supreme good. Paradoxically, moral self-perfection does not facilitate positive self-esteem, because: the higher moral development is the stricter the requirements on oneself are” [12].

These findings also agree with V.A. Lefebvre’s theorem: **a perfect individual cannot see himself perfect** [13]. The typical wishes for a subject who seeks to choose the best alternative are those of the premiere quality, namely *Norm*. This is how his longing to perfection reveals itself. Nevertheless, the self-esteem of a perfect subject never equals *Norm* (“1” in the binary logic), that is, it never equals perfection. As soon as a subject starts to consider himself perfect, he stops being one. The reflexive model shows that phenomenon: a low self-esteem means seeking perfection while realising own imperfection. Mathematically this longing for perfection can be rendered as follows: a lower self-esteem doesn’t equal *Norm* $a3 \rightarrow a2 < I$, if the wishes exceed expectations ($a3 > a2$) or own experience. Therefore we can conclude: **it is hard to control a subject who underestimates himself, and subjects who overestimate themselves are easier influenced by the environment.**

Let us study the opposite situation where subject is capable to choose the worst alternative possible, or Anti-norm.

If the environment forces the subject to choose Anti-norm: $a1 = 0$, and the subject perceives this pressure as Norm: $a2 = I$, then he always chooses Anti-norm.

Indeed, as equation (3) shows $0 \leq (a3 \rightarrow I) \rightarrow 0 \leq I \rightarrow 0 = 0$, whereas the inequality becomes a strict equality: $(a3 \rightarrow I) \rightarrow 0 = 0$. Whenever *Anti-norm* is taken for Norm, the subject doesn't fail to choose Anti-norm. This confirms Lefebvre's axiom "the harm of confidence" [6]. Hence we discover an important principle of reflexive control: in order to force an individual to choose Anti-norm we should instil the impression of Anti-norm as Norm.

This principle is consistent with the situation of a simple deceit: something wished is presented as something real, and once we believe it, we are tricked. Such reflexive control is impossible to re-use: once the lie is exposed we stop trusting the liar and he has a harder time making us do as he wishes. The new experience leads to deviation from estimating the pressure of the environment $a2$ as Norm, therefore the subject gets a degree of freedom of choice: $0 \leq a3 \leq -a2$

Still there are more opportunities to make an individual to choose Anti-norm. Value $A1 = (a3 \rightarrow a2) \rightarrow 0 = 0$, if the subject's "self-image" $A2 = a3 \rightarrow a2 = I$; then $A1 = I \rightarrow 0 = 0$. The subject's self-esteem is too high: he considers himself choosing Norm and may consider choosing Anti-norm, presuming them both in line with "ordinary" behaviour. Therefore: an individual whose high self-esteem equals Norm will be inclined to give in to the pressure of the environment and choose Anti-norm.

The equality $a3 \rightarrow a2 = I$ is true if $a3 \leq a2$, that is high self-esteem appears in the situation when the subject's wishes do not exceed his expectations.

So in order to create within the subject the feeling of high self-esteem in the situation of choice one needs to create expectations that exceed his wishes. Therefore we may conclude:

Axiom of the choice of Anti-norm: A subject is always ready to choose Anti-norm if his wishes are lower than or adequate to the pressure of the influence of the environment.

And the principle of reflexive control will be as follows:

In order to force a subject to choose Anti-norm, one needs to create the feeling of high self-esteem within the subject in the situation of choice. And this can be achieved by instilling within him the expectations that exceed his wishes.

Expectations should exceed wishes – this is the main principle of reflexive control. One needs to promise as much as possible. For instance, the whole communist propaganda was based on constant expectations of "the bright new future" in the form of the idealistic communism. The modern politicians do not forget this principle, particularly during their election campaigns.

The influence of the psychological set on choice

Psychological set in the situation of choice is manifested as the expected pressure of the environment a_2 . This pressure can be low as compared to the real one $a_2 < a_1$, adequate $a_2 = a_1$ and high $a_2 > a_1$. The behaviour of the subject strongly depends on the expected pressure: alongside with the real pressure it forms the upper margin of the realistic choice. If the expectations are **low** or **adequate** to it: $a_2 \leq a_1$, then $a_2 \rightarrow a_1 = I$. So, the subject has partial freedom of choice (only in case if $a_1 \neq I$) and can realise his intentions to choose stronger norms than the pressure of the environment, the limitation he has is Norm itself: $a_1 \leq (a_3 \rightarrow a_2) \rightarrow a_1 \leq I$.

If the subject has high expectations, that is $a_1 < a_2$, then $a_2 \rightarrow a_1 \neq I$ and he is unable to realise his intentions to choose Norm: $a_1 \leq a_3 \leq a_2 \rightarrow a_1 < I$. Indeed, if $a_1 < a_2$ and $a_1 < \neg a_2 \vee a_1$, then $a_1 \vee a_2 < \neg a_2 \vee a_2 \vee a_1$ and $a_1 \vee a_2 < I$, and since $a_1 < a_2$, then $a_1 \leq a_3 \leq a_2 \rightarrow a_1 < I$.

Thus a subject with high expectations about the environment can never choose Norm. High expectations restrict the freedom of choice and lead to frustration that creates preconditions for reflexive control. If one instils within the subject the psychological set to choose Norm ($a_2 = I$), it would develop into the readiness to give in to the pressure of the environment, as any outer pressure would be regarded by him as a norm stronger than the one which he tries to avoid. Indeed, $a_2 = I$, then $\neg a_2 = 0$ and any value $0 \leq a_1$. In this case $A_1 = a_1$: the subject acts in accordance with any influence of the environment, if he regards it as Norm. Therefore another principle of reflexive control becomes obvious:

The subject who regards any pressure of the environment as Norm is always ready to give in to that pressure, moreover, he does it deliberately.

This principle is used in totalitarian regimes to create “normative” guidelines. For instance, in the soviet ideology the normative guidelines, encompassing all best qualities, were laid out in the Moral Code of the Builder of Communism. Literature and cinema reproduced artistic images of those norms. The reality had to be perceived through the prism of those canonised images as Norm. Any criticism towards the reality was suppressed and uprooted “isolated imperfections” had to be dealt with without stirring the idealistic evaluation of the reality.

Reflexive control of the subject

The term reflexive control means creating within the subject the readiness to give in to the pressure of the environment: $A_1 = a_1$. The goal of reflexive control is to make the subject give in to the outer pressure. As it was mentioned before, there are two types of managing the subject: reflexive control and reflexive programming [3]. In case of *reflexive programming* the subject gives in to the pressure of the environment regardless of his de-

sires. In that case $A1 = a1$ and $A1 \neq a3$. In case of reflexive control he gives in to that pressure deliberately, that is reflexive control is designed to create within the subject such intentions that would correspond to the pressure of the environment. In that case $A1 = a1 = a3$.

Equation (1) shows that the realistic choice is determined by the outer pressure if

$$(a3 \rightarrow a2) \rightarrow a1 = a1. \quad (4)$$

Let us study the situation where the pressure of the environment matches the subject's wishes: $a3 = a1$, that is the subject gives in to the pressure of the environment deliberately. Than:

$$(a1 \rightarrow a2) \rightarrow a1 = a1, \quad (5)$$

or $(a1 \& \neg a2) \vee a1 = a1$. This equality (rule of acquisition [10]) will be true in any lattice. Therefore, **if wishes of the subject match the pressure of the environment, he is always ready to give in to that pressure.**

Thus, the main principle of reflexive control is to create wishes that match the pressure of the environment. The psychological methodologies of reflexive control of the subject seek to create a situation when the subject would be willing to change his way of living and change it in the way suggested by the environment or his "supervisor" (psychoanalyst in clinical cases). At this stage he gives up his way of life he is accustomed to; it is necessary both for reflexive control and programming.

In such situation the self-esteem of the subject is determined by his experience and the pressure of the environment: $A2 = a3 \rightarrow a2 = a1 \rightarrow a2 = \sup\{\neg a1, a2\}$.

Let us study the instance when $a1$ and $a2$ are incomparable, that is when the pressure of the environment and the subject's previous experiment lay "in different planes" the subject is in an unusual situation. Then his self-esteem equals or is higher than the opposite value of the pressure of the environment: $\neg a1 \leq a2$, and $A2 = a2$, or $\neg a1 \geq a2$ and $A2 = \neg a1$, that is $\neg a1 \leq A2$. In other words, the subject perceives himself as someone above the pressure of the environment, someone capable of confronting it. His expectations don't relate to the reality and are estimated in different scales: the background experience doesn't count. Whenever the subject has the self-esteem of someone who confronts the outer world, there appear conditions when he can give in to the pressure of the environment. The subject feels as if he was a fitting opponent, a "fighter" who can prevail over the world.

We could support this statement with the following example: in the soviet times the state ideology always suggested that people were fighting foreign enemies, bourgeoisie mentality, ill Western influence, calamities, "fighting for the harvest", "fighting for introducing culture into everyday life", etc. All of that helped to keep multitude of people in submission.

Forming the mass mentality of “fighters” with the outer world blurred the people’s perceptions of the reality and helped to successfully manipulate them.

On the similar grounds there feeds another phenomenon: most people who are not easy to control don’t feel themselves “fighters” with the outer world. They just live within the surroundings according to the principles they don’t declare, but in instances of choice they make a decision that contradicts the world’s pressure just because they “cannot have it any other way.”

Thus we arrive to another conclusion of reflexive control: *in order to force the subject to give in to the pressure of the environment it is necessary to create within him expectations incomparable with the pressure of the environment and to form the self-esteem that is opposite to the real estimation of the pressure of the environment.*

If the subject’s expectations are lower $a2 < a1$ or higher $a2 > a1$ than the real pressure of the environment, than $a2$ and $-a1$ are incomparable. In that case $A2 = a3 \rightarrow a2 = a1 \rightarrow a2 = \sup\{-a1, a2\}$, that is $-a1 < A2$ and $a2 < A2$ – the self-esteem is higher than the opposite value of the pressure of the environment and higher than the subject’s expectations. In other words, the subject gives in to the pressure of the environment if his expectations are inadequate to the pressure of the environment, while his wishes match that pressure.

As we see the capabilities of reflexive control are vast and usually incorporate several options. The most important condition is inadequacy between the self-esteem and the pressure of the environment. In such instances wishes that would correspond to the outer influence can be formed. It is possible to prove that **a subject with low expectations of the outer world is inclined to give in to the influences that exceed his expectations, and a subject with high expectations is so inclined with the influences that are lower than his expectations.**

Reactive choice: reflexive programming

Let us study the situations when the subject gives in to the pressure of the environment without intending to do so. That subject in spite of his desires just reacts to the pressure of the environment by making the choice suggested by the world. In such case $A1 = a1$ and $a1 \neq a3$:

$$(a3 \rightarrow a2) \rightarrow a1 = a1, \text{ and } a1 \neq a3. \quad (6)$$

Using the definition of implication equation (6) can be interpreted as $\neg(a3 \rightarrow a2) \vee a1 = a1$. This equality is true whenever $\neg(a3 \rightarrow a2) \leq a1$, which is possible only when the self-esteem of the subject $a3 \rightarrow a2$ and the pressure of the environment $a1$ are incomparable. Such situation is possible if the subject finds himself in a strange situation and he cannot appeal to any

previous experience. He is afraid to “lose his face” and accepts the rules that the environment forces on him.

The expression $\neg (a3 \rightarrow a2) \leq a1$ can be interpreted as: $a3 \& \neg a2 \leq a1$, and thus $\neg a2 \leq a1$ and $a3 \leq a1$. The 1st example describes the situation when the subject fears negative consequences, unfavourable feedback from the environment. In the second example the subject assumingly doesn't want to struggle with the situation: $a1 \neq a3$, than $a3 < a1$, so his wishes are weaker than the pressure of the environment. Therefore he is ready to give in to that pressure in spite of his wishes. We arrive to another conclusion: **the subject gives in to the pressure of the environment and cannot realise his intentions if his intentions are weaker than the pressure of the environment: $a3 < a1$.**

This statement confirms the principles of reflexive programming when predetermined points of view, positions and notions are imposed of the individual in order to instil in him the readiness to accept new forms of living. To achieve it, for instance, the subject can be placed in the conditions that would pre-dispose him to wishing less, so that his wishes would not exceed his every-day experience. An individual doesn't only react to the influence of the environment, he is capable of changing the environment if he wishes so: the task of reflexive programming is to exclude such intentions.

Then, the basic principle of reflexive programming will be: *an individual shouldn't desire any improvement*. On one hand it could be very good conditions of living, so good that one “won't dare dreaming of anything better.” On the other hand just the opposite: conditions could be so miserable that his desires downgrade to satisfying his daily needs, as it is the case in penitentiary institutions, or totalitarian sects, as it was under the soviet regime. Then people would least possibly engage in the politics, all their thoughts would be focused barely on survival. It's easier under such conditions to instil in people overblown expectations. When the conditions are as bad as they can be one can believe quite unrealisable promises. In both cases an individual will be more prone to reflexive programming.

Reactive way of living

Under certain conditions the choice of the subject match his expectations. Then the following polynomial should be true: $(a3 \rightarrow a2) \rightarrow a1 = a2$. Apparently, it is possible if:

$$A1 = a2, \text{ if } a3 \leq a1, \text{ and } a1 = a2. \quad (7)$$

Thus, **the subject's expectations fulfil if they match the pressure of the environment and his wishes don't exceed his expectations.**

Those are the conditions under which reflexive control becomes reliably stable. The subject lives a reactive life within constant and predictable

environment with known “rules of the game”. His previous experience matches the reality. And in order to live at ease in such environment one needs to keep his wishes at bay. The pressure of the environment and the subject’s expectations should not necessarily match Norm, in fact any value on the scale of norms may do. The adequacy of perception is important. The subject, who adequately estimates the pressure of the environment but who wishes nothing better, will follow the commands of the environment as something he takes for granted. This situation corresponds to the reactive way of living.

References:

1. *Neisser U.* Cognition and Reality: Principles and Implications of Cognitive Psychology. Moscow, BGK Baudouin de Courtenay, 1998. (In Russian)
2. *Rubinstein S.L.* An Individual and the World: Problems of General Psychology. Moscow, Pedagogika, 1976. pp. 253-381. (In Russian)
3. *Lepsky V.E., Stepanov A.M.* Reflexive Control in Totalitarian Sects. // Reflexive Control: Collection of Essays. International Symposium 17-19 October, 2000, Ed.: Lepsky V.E. Moscow, Institute of Psychology of the Russian Academy of Sciences, 2000. pp. 122-133. (In Russian)
4. *Lefebvre, V.A.* Sketch of Reflexive Game Theory. 1998 Proc. of Workshop on Multi-Reflexive Models of Agent Behaviour. (August 18-20, Los Alamos, New Mexico, USA). 1998. pp. 1-40. (In Russian)
5. *Lefebvre, V.A.* The Cosmic Subject. Russian Academy of Sciences, Institute of Psychology Press, 1997, 166 p.
6. *Lefebvre, V.A.* The Fundamental Structures of Human Reflexion. The Structure of Human Reflexion: The Reflexional Psychology of Vladimir Lefebvre. Peter Lang Publishing, 1990, pp. 5-69.
7. *Taran, T.A.* Many-Valued Boolean Model of the Reflexive Agent // J. Multiple Valued Logic. OPA N.V. Gordon and Breach Science Publ. 2001. Vol. 7. pp. 97127.
8. *Taran, T.A.* The Formalisation of Ethical Values in Models of Reflexive Behaviour, Proc. of Workshop on Multi-Reflexive Models of Agent Behaviour. (August 18-20, Los Alamos, New Mexico, USA). 1998. pp. 95108.
9. *Taran, T.A.* Multivalued Boolean Models of Reflexive Choice // Reflexive Control: Collection of Essays. International Symposium 17-19 October, 2000, Ed.: Lepsky V.E. Moscow, Institute of Psychology of the Russian Academy of Sciences, 2000. (In Russian)
10. *Birkhoff, G.* The Lattice Theory. Moscow, Nauka, 1984. (In Russian)
11. *Kelly, George A.* A Theory of Personality: The Psychology of Personal Constructs. St. Petersburg, Rech, 2000. (In Russian)
12. *Shreider, Yu.A.* Lectures on Ethics. Moscow, MIROS, 1994. (In Russian)
13. *Lefebvre, V.A.* Algebra of Conscience. Dordrecht, Holland: D.Reidel, 1982.

CHRONICLE OF EVENTS

The Third International Interdisciplinary Scientific and Practical Symposium REFLEXIVE PROCESSES AND CONTROL *Moscow, October 8-10, 2001*

RESOLUTION

The 3rd International Symposium "Reflexive Processes and Control" has been held in Moscow (8-10 October, 2001) on the initiative of RAS Institute of Psychology (Laboratory of Psychology of Reflexive Processes) and with assistance rendered by Diplomatic Academy of Russian Federation, Ministry of Foreign Affairs.

Some 200 participants from Russia, Belarus, Kazakhstan, Moldova, Ukraine, Bulgaria, Canada, and the United States took part in this symposium. Among these people were scientists, public figures, researchers in the field of politics, diplomacy, and government, journalists, information technology specialists, and others.

1. Symposium Objectives

Various sciences dealing with complex systems – psychology, sociology, economics, political and military sciences – seek objective definitions not only for system physical parameters, but also for its subjective aspects, the essence of which consists in human interactions. Methods of objective description of systems with inner worlds, i.e., subjects, are being developed in reflexive studies. The subject can be an individual, a group of individuals, an institution or an entire country. A particular reflection can be related to the individual's psychic process or to macrocultural perception that, for example, {would} allow a country to construct an image of the self. Such a variety of applications has predetermined an interdisciplinary nature of our symposium.

The main objective of the Symposium was to draw attention of scientists, specialists in management, and public to the importance of reflexive approach application which can help in overcoming some cliché impeding stabilization of both global processes, and Russia development. The participants of the Symposium have discussed current problems in politics, economics, education, culture, security, information wars, fight against terrorism, peacekeeping, information technologies, creation of civil society, etc.

2. Symposium programme

The plenary sessions emphasized reflexive aspects of the development of Russia and the whole humanity. A particular attention has been given to the ethical problems of management and development. A broad and interesting discussion followed some questions raised during a Round table "The Problems of Strategic Management and Development of Russia (reflexive aspects)":

1. What is a "strategic management"?
2. What requirements shall a strategic subject meet?
3. What are the strategic subjects in Russia?
4. What are the obstacles for the development of the strategic subjects in Russia?
5. What favors the development of the strategic subjects in Russia?

The work of symposium was organized in seven sections:

1. Subject. Reflexion. Activity.
2. Reflexive processes: mathematical models and synergetics.
3. Reflexive processes in politics. Information wars, terrorism, and peacekeeping.
4. Reflexive processes in economics.

5. Reflexive processes in management support systems.
6. Reflexive processes in mass communications.
7. Development of reflexive abilities.

Over 100 presentations have been made.

The first issue of an international interdisciplinary scientific and applicational journal, "Reflexive Processes and Control", was presented during the Symposium.

3. Assessment of the Current Situation

The participants of the Symposium expressed their concern about the global threat of terrorism to the security of mankind entering XXI century and about inadequate realization of this threat by world statesmen, businessmen, and public institutions.

- (1) Spontaneous processes bringing to our life the products of scientific and technological progress (hurried by the demands of consumer society), at the same time turn mankind into a hostage of avalanche-like growing threats to its existence. In our days, the security and development of mankind depend not only on national concepts, military doctrines of the states or statesmen actions, but also on the goals and moral restrictions of groups and individuals.
- (2) New and real threats to the people of Earth arise when we implement technical projects for development of Global Information Society and, at the same time, ignore the problems of informational and psychological security. The lack or delay of appropriate decisions can undermine mental and physical health of the Earth population in the course of development of global computer nets, digital and interactive mass media technologies, and non-controlled distribution of mass media products. A matter of special concern is an appearance of prerequisites that facilitate application of improper computerized psychic technologies to manipulate public opinion and use some behavioral attitudes as a means for a wide-range ecological terror, which can result in irreversible changes in the genetic fund of biosphere.
- (3) The basic documents on security problems have generally a "defensive" character, and this condemns mankind to be late in responding to new threats from terrorist organizations and individual terrorists. A new forestalling approach is required to provide early forecast, to beat the intents of asocial elements, and to create conditions that would form self-regulating machinery for preventing those threats from coming. Then, a new means is required to support processes of world community stabilization and development and to predict and neutralize the threats. Traditional structures responsible for international and national security are not ready {for functioning} in a new situation. These structures need time to adapt; however, neither separate countries, nor mankind as a whole have this time available. The whole world shall resolve this problem by mobilization of all intellectual resources on the basis of new forms of collective work and by versatile interaction of public, commercial, and governmental structures.

The reflexive approach can be used as a methodological foundation for interdisciplinary work aiming at stabilization and development of world community through mutual understanding and confidence, concordance of particular interests, and integration of different subjects with full respect to their distinctness and autonomy.

Within the last few years, on the initiative of Laboratory of Psychology of Reflexive Processes, an international scientific community engaged in research of reflexive processes and designing reflexive technologies has been formed. It encompasses more than 500 highly educated professionals many of whom are the leaders of other communities.

Our community is capable of and ready to participate in solving complicated interdisciplinary problems of mankind survival and development. It is necessary to build up the adequate organizational forms. Moreover, the new ways of solving the problems of mankind

security and development must be elaborated and presented to statesmen and leaders of international organizations.

4. Symposium Recommendations

(1) To appeal to the Presidium of Russian Academy of Sciences for considering the necessity of organization and support for the fundamental interdisciplinary work in the field of reflexive processes and control.

(2) To support the proposal of the Symposium participants to establish International Institute of Reflexive Technologies (IIRT).

The objectives of the Institute will be:

- 1) To work out reflexive technologies for attainment of mutual understanding and confidence between all subjects of world community (nations, ethnoses, alliances, citizens, etc.).
- 2) To work out reflexive technologies for strategic management and development of world community {of} various subjects (nations, ethnoses, alliances, citizens, etc.) participating in {this} process {with} their interests taken into account.
- 3) To work out reflexive technologies for protection of subjects and their relationships (specifically, interstate relations) against hidden intrusion of other subjects.
- 4) To work out technologies that shall "waken" and support reflexion of different subjects, including individuals and planet population as a whole; molding a culture of strategic subjects.
- 5) To work out humanitarian technologies for informatization of society (including mass media) on the basis of reflexive approach.
- 6) To ensure international examination (reflexive analysis) of events, conflicts, documents, etc.
- 7) To coordinate international work in the field of reflexive technologies.

Foundation of the International Institute of Reflexive Technologies can be useful in solving urgent Russian problems, which are:

- ✓ Building Russian institutions that can efficiently mobilize intellectual resources for resolution of interdisciplinary problems of security and development of Russia. Judging by their results "Centers for Strategic ...", yesterday being in fashion, were unable to elaborate technologies adequate to the problems arised. There is no organizations of "brainstorming" type in Russia (like RAND Corp. in the United States); however, the need for those is more than apparent, not only in relation with a new wave of terrorism.
- ✓ Mobilizing Russian intellectual potential for creation of new humanitarian technologies intended for stabilization and development of world community and for solving problems of Russia development as well. Russian intellectual potential will begin to shine in the light of successes and glory if there will be an "organizational setting" adequate both to its possibilities and to the urgent practical problems.
- ✓ Attracting capital investments to Russia for development of intellectual technologies.
- ✓ Creating favorable conditions for Russia intellectual elite to prevent "brain drain" from and initiate "brain immigration" to Russia.
- ✓ Russia becoming a worldwide leader in export of humanitarian technologies.

To ask participants of symposium to initiate foundation of International Institute of Reflexive Technologies and to draw scientists, managers, experts, as well as enterprises, companies and organizations, as the members or authorized partners, in this Institute activity.

To recommend international, governmental, commercial and non-commercial organizations and citizens to support foundation and activity of International Institute of Reflexive Technologies.

(3) To recommend organizers and participants of the Symposium to prepare and publish popular materials related to the problems of reflexive processes and control.

(4) The Symposium organizers and institutions interested in development of reflexive studies shall make their best to attract young generation (students, post-graduate students, young specialists) in working on these problems.

(5) To ask the Symposium organizers to prepare a number of publications informing wide range of scientists and specialists on development of the reflexive studies.

(6) The Symposium highly appraises the scientific level and practical importance of international interdisciplinary scientific and applicational journal "Reflexive Processes and Control" and recommends that journal to be widely distributed abroad.

(7) The Symposium expresses its gratitude to the Organizing Committee, management of RAS Institute of Psychology, Diplomatic Academy of the Russian Federation Ministry of Foreign Affairs and National Settlement Bank for the excellent arrangement of the event, creating the atmosphere of kindness, deep mutual understanding, and mutual enrichment, for arousing the feeling of social need in reflexive studies, and for opening new horizons for professional growth and self-expression.

The Symposium asks its organizers to retain traditions and conduct the IV International Symposium "Reflexive Processes and Control" next year.

Chairman of Organizing Committee of the III International Symposium,
Head of Laboratory of reflexive processes of RAS Institute of Psychology,
Doctor of Psychology

V.E.Lepsky

★★★ *The events we organize are supported by ...*

Commercial Bank "National Calculating Bank"

Number of license: 2899, 10.06.94; reregistered on 29.07.99
(operations in RUR, foreign currency; precious metals operations)

Phones: (095)917-0500,
(095)916-0095

Fax: (095)917-0690

Telex: 485427 NARB RU

E-mail: cbnrb.mos@mtu-net.ru

Internet home page: www.cbnrb.ru

**The Fourth International Interdisciplinary
Scientific and Practical Symposium
REFLEXIVE PROCESSES AND CONTROL.**

Moscow, October 6-8, 2003

Preliminary information

The Institute of Psychology and the Institute for Human Studies of the Russian Academy of Sciences invite you to participate in the International Interdisciplinary Scientific and Practical Symposium on Reflexive Processes and Control (RPC'2003) to be held in Moscow, Russia, October 6-8, 2003.

Major topics

1. Subjects as reflexive systems.
2. Reflexion and identity. Reflexion and ethics. Reflexion and creativity. Reflexion and methodology of a science.
3. Development of reflexive abilities, stimulation and support of reflexive processes for various types of subjects.
4. Mathematical models of reflexive processes and reflexive control. Reflexive processes and synergetics. Reflexive processes and artificial intelligence.
5. Reflexive processes in various types of activity and control:
 - Social design and social development; managing societies; politics and economics;
 - "Information wars", information and psychological security, mass communications;
 - Computer science and society; decision making support systems; support for Internet communities, etc;
 - Culture, education, religion;
 - Setting up mutual understanding and trust among representatives of various nations;
 - Forecasting and neutralizing various types of social conflicts.
6. Strategy of Russian development (reflexive aspects).
7. Hot spots and conflicts all over the globe: the reflexive analysis.

The scientific program will include plenary sessions, round-table discussions, presentations, workshops, research and editorial projects, etc.

The list of participants includes researchers from Russia, Byelorussia, Kazakhstan, Moldova, Ukraine, Germany, Canada, USA and some other countries.

Continuously updated information on the planned topics, programs, events, and participants will be posted on the web-site <http://www.reflexion.ru/>

Languages: The official languages of the Symposium are Russian and English.

Submission of abstracts: Two-page abstracts of papers or panel session presentations should be sent via e-mail to ***lepsy@online.ru***.

Please send your abstracts till August 15, 2003.

To participate without presenting a paper, please send us your e-mail address so that we can provide you with complete information.

Registration fee: \$350 (US).

Social program: The social program is under development.

For additional information, please contact Dr Vladimir Lepsky:

Yaroslavskaya St., 13, Moscow, 129366, Institute of Psychology, Russian Academy of Sciences

or

Volkhonka St., 14, Moscow, 119992, Institute for Human Studies, Russian Academy of Sciences

Fax: 7 (095) 282-9201 or 7(095) 203-91-69

E-mail: lepsy@online.ru

<http://www.reflexion.ru/>

**Interdisciplinary scientific and practical seminar
“REFLEXIVE PROCESSES AND CONTROL”**

8 October 2001. Round Table “**Formation problems of reflexive subjects**” (Published in this issue).

30 November 2001. Round Table “**Information, psychology and diplomacy**” (Diplomatic Academy at the Russian Ministry of Foreign Affairs). *Hosts:* Kashlev Yu.B., Lepsky V.E.
Programme of seminar:

Kashlev Yu.B. Formation of global information society and Russia’s place in it.

Lepsky V.E. Humanitarian paradigm of Russian foreign policy in the twenty first century.

Izvekov N.N. Information and diplomacy.

Brushlinsky A.V. Psychology and diplomacy.

Galumov E.A. PR in international relations.

Kurdyumov B.G. The problem of information security in international relations.

Fedorov A.V. What’s wrong about international information security?

Ruban L.S. The collective security system and the world order today.

Anisimov O.S. Reflexive culture in the international settlement processes.

Mashlykin V.G. On the modern information terrorism.

Kikot V.I., Melnik I.K. Information-psychological and physical safety of diplomatic representative officers.

Abaev L.Ch. Reflexive analysis and modeling of international conflicts (by the example of NATO expansion to the East).

Matveeva L.V. Some peculiarities of intercultural communications in mass media.

Stepanov A.M. Is it possible to exert unauthorized information effect on psychophysical state of diplomatic officers?

Galkin V.E., Kretov V.S., Frolov I.V. Using a subject-oriented approach to development of basic information and analytical complex “Diplomat” (in printing).

16 January 2002. “**Reflexive processes and control (cybernetic aspect).**” Visiting meeting in the form of “round table” in cooperation with Cybernetics section of Central House of Scientists of RAS.

Host: V.E.Lepsky.

Speakers: Bahur A.B., Belyaev I.P. (D.Sc.), Burkov V.N. (D.Sc.), Yereshko F.I (D.Sc.), Zenkin A.A. (D.Sc.), Kara-Murza S.G. (D.Sc.), Kuznetsov O.P. (D.Sc.), Malinetski G.G. (D.Sc.), Petrovskiy V.A. (D.Sc.), Raikov A.N. (D.Sc.), Rastorguev S.P. (D.Sc.), Stepanov A.M. (D.Sc.), Tsygichko V.N. (D.Sc.).

31 January 2002. “Reflexive processes studies – a basis for integration of sciences in the twenty first century.” Visiting meeting in the form of symposium within the frame of All-Russian conference of Russian Psychological Society “Psychology and Its Applications”.
Hosts: Lepsky V.E. (Moscow, IP RAS, Doctor of Psychology), Sharov A.S. (Omsk, OGPU, Doctor of Psychology)

NEW BOOKS



Reflexive processes and control. Proceedings of the 3rd International Symposium, 8-10 October 2001. Moscow / Eds. [A.V.Brushlinsky](#) and V.E.Lepsky. Moscow Institute of Psychology Publ. 2001. 242 P.

The first part of the proceedings includes papers related to the general methodological problems of relationship{s} between such key categories as subject, reflexion, and activity, with {special} emphasis to the ontological aspects. The results of recent studies of specific tasks of reflexive control are presented in this part (A.L.Zhuravlev, N.A.Nosov, G.N.Smolyan, G.N.Solntseva, A.S.Sharov, and others).

The second part concentrates on mathematical models of reflexive processes and synergetic, formal description of various aspects of reflexive choice and modeling of social processes (A.A.Zenkin, E.N.Knyazeva,

G.G.Malinetsky, V.A.Petrovsky, T.A.Taran, and others).

The next parts cover specific features of reflexive processes in super dynamic politics of our days, the problems of international security and terrorism, and peacekeeping.

The fourth part includes an analysis of reflexive processes taking place in economics of different types and in management decision support systems. Particular attention is given to the role of reflexion in mass communications and information warfare.

The final part concerns education problems and innovative methods of development of reflexive processes.



Lefebvre V. *Algebra of Conscience.* Dordrecht/Boston/London: Kluwer Academic Publ. - 2001.

**The author is recalling ...
How the idea of this book came into my mind?**

Recently the second edition of my book *Algebra of Conscience* was released. Should I told about this book in America, I would do it in a manner quite different from that I want address to you, since, due to my life experience, my soul is broken up into two parts – Russian and American. So let me first try to speak as if I were in America.

That is my book. As you see, it is printed by a reputable publisher, and I did my best

to write it in clear wording. As you know, the book can be ordered at any university shop or sent to your address with cash on delivery.

The book can be used in several ways. University teachers, for example, can develop at least three courses using that book. The first one may concern ethical problems. In my opinion, this course will attract third-year students or younger advanced stu-

dents. The second course requires more profound approach. This course could contain formal theory of moral choice. Students of philosophical specialties may also be interested in it. This course can provoke some lively discussions of how people make decision in situations of moral dilemma. Finally, the third course can be of more special character and would relate to the mathematical aspects of this work. One part of course could be devoted to the reflexive models and their relationship with self-reference, whereas the other part would demonstrate relations between reflexive models and dynamic systems and how one could simulate subjective choice in nonlinear case.

The second application of this book is its use for the artificial intelligence specialists who endeavor to create systems capable of solving not only utilitarian problems, but the moral ones as well.

In America I would speak about my book in this kind of manner. Conceptual part of story would be of minor interest, because people are very busy and they only want to know how the thing can be used.

Here I would like to tell you about the main concepts and my intention of the book.

How did the intention arise? First of all, I would say a few words about myself.

In 1974 I immigrated to America. At that time, the path to America ran via Rome (if you were not going to Israel). First, people came to Vienna, wherefrom immigrants were transported to Rome by railway, and all people were waiting an entry visa to one or another country.

In 1974, immigration to America, Canada, Australia and European countries just began, no regulations existed, and we knew nothing.

In Rome I suffered a severe poisoning. When I was unconscious, the ambulance transported me to the hospital of Saint Eugene, asylum for the poor. I found myself in a huge ward with twenty persons or thereabout, and all in bad condition. Some of them were dying. I was very weak, so two patients took care of me. One of them was a fascist and fought against Russians in the environs of Stalingrad. The second one was a communist and also took part in the Stalingrad battle. Both were in captivity in the USSR, and both survived. It so happened

that these two men, the nazi and the communist, became dearest to me in some sense. Suddenly I realized that looking to the face of death I did not worry about these men political views. At this time I was enlightened that there is something greater than political views.

Please don't consider this feeling a religious one. Apparently, it was an experience of an engineer who discovered how we, people, were organized and structured, what was the value of our political views and discussions, and what hidden forces governed us. I began thinking of what these forces could be? The main concept came to somewhat "automatic" that I couldn't control consciously. It would be an exaggeration to say that I immediately got starting in this direction, however a thought was lazily smoldering.

Then we left for America. There were difficulties of settling down, poor knowledge of language, and a strange world around us. At first, I got a job as a Russian language teacher assistant at a Los Angeles University. Meanwhile, thinking of the problem was continuing.

One day I envisioned a structure. Let me tell about it without any mathematics. I dare to say that you know a type of cartoon where a man is drawn with another little man in his head, and this little man has yet a smaller man drawn in his head, and so on. It occurred to me that these pictures could be used in uncommon manner, namely, as the computational schemes. Assigning the numbers (which they are not) to these faces and assuming some functions to connect the faces, one can construct a simple psychological model of human being, then, calculate the entire picture, and you get a behavioral act. That was my first idea. Calculations referring to the face drawn within itself described the image of the self, and calculations referring to the image of other face described what a man thinks about the other.

Right away, I understood that this calculation within the largest face is analogous to the generation of inner emotions. That was my second idea. Finally, the third idea was to find not just "possible" but the actual functions. I was not about to devote my life to analyzing "possible" approaches, bur-

dening myself with mathematics, inventing the functions or proving theorems that will eventually be discarded. If this idea were valid, the range of functions cannot be very large, and I set a task of finding the only pertinent functions. My own introspection and discussions with my friend, a deeply religious person, have led me to a hypothesis what these functions could be.

The first model was a pure Boolean one where the values (1 or 0) of variables were the values of these faces. The interpretation of behavior was "ethical": "1" corresponded to the "choice of good" and "0" corresponded to the "choice of evil". The calculations corresponding to the inner choice had to be performed by the same rules and their outcomes should bring the analogues of inner experiences.

Further reasoning led me to an idea of two, not one, "correspondences"! "This one" – and quite "the contrary one"! A mathematical feeling has prompted the idea that two different algorithms or, more precisely, two different interpretations of the same algorithm could exist. An operation that means a confrontation for some people at the same time means an agreement for the others. So, a concept of the two ethical systems arose. These two operations turned out to be non-symmetrical. In other words, if we assume that a subject can choose a relation to another subject, then in one operation he always has a better image of himself than in another operation. This means that choosing one operation he rises in his own estimation, and does not – when choosing another operation. Next, a theorem appeared: if the subject choosing a relation with another subject rises in his own opinion, he actually becomes better, that is, an equation describing subject's behavior will contain more "1's" than an equation that describes another choice. Suddenly I realized that this is an important formula and that the two ethical systems exist and that there is no any "machine" related to any practical problems, which a subject's activity is aimed at. Neither utility, nor practical reasons, but the image of the self

and striving for higher ethical status of himself govern the choice of subject with respect to another person.

And one further theorem appeared. As it turned out, if the subject choosing a relation to another person rises in his own estimation, a situation (calculated it in the head of the subject) takes on a value of "1" less frequently. The following became clear: by choosing this relation to the other, the subject creates a "bad" situation! He puts himself in such a situation deliberately thus striving to raise in his self-evaluation. Obviously, this can be interpreted as a formal analogue of sacrificial behavior.

This idea is totally new, since it is common to consider a sacrificial behavior as an altruistic one; that is, a sacrifice is made for the closest friend, an idea or highest spirit. However, here we see that the only meaning of sacrificial behavior consisted in canceling negative impulses in the image of the self, so a hypothesis was brought into life: a man tries to diminish his feeling of guilt.

Paper men story is just a literary explanation of a mechanism that operates within this model. In this way I want to elucidate in brief and clear form the following idea: one hero increases his self-evaluation while accepting sacrificial compromise, whereas the other will achieve the same result while choosing sacrificial confrontation. Why does this happen?

I have already exemplified a dilemma of paper men in the article printed in this volume. Later it became clear that there are three more formal characters. The first one is Saint who makes a sacrifice and considers it as his duty or job. The next one is Philistine who doesn't make a sacrifice and realizes that he never does it. And one more character is Hypocrite who doesn't make a sacrifice but sees himself making it.

Whatever the wordy interpretations are, we can calculate ethical statuses of characters. It was found that the Saint has the highest status, the Hero has the next high status, the Philistine's status is lower, and the Hypocrite has the lowest status.

It took me only four months to write this book.





Boris Birshtein. Partnership for Life.
Universul Press, 2002.

The author is a Doctor of Philosophy and Economics, the President of North-American Academy of Informationology, an Honorary Member of many scientific communities. This book is not only deeply scientific, but topical as well, first of all because of its main theme – there are no alternatives to the worldwide partnership. The author, being involved in practical activity, realizes a high efficiency of reflexive control in various spheres of life. However, after 11 September these valuable intellectual potentials simply had to merge – these are Boris Birshtein’s concerns. He calls on his readers, scholars, statesmen, diplomats, and employees of non-governmental institutions, to conceive the necessity of preventing the threats.

“Speaking about partnership in the struggle against terrorism, I above all refer to the USA-Russia collaboration, and not only because yesterday’s enemies are taking up the same defensive position, but, as matters stand, Russia has a real experience in confronting terrorism”, the author writes (p. 6). That experience has to be accommodated by other countries, so the level of self-

knowledge and knowledge of others must grow. In fact, this is a subject matter of the theory of reflexive processes. From this point of view, Russia is the most required “fighter” over the whole “postwar space”, as Boris Birshtein writes (p. 48–49), no matter how strange it may sound. The author believes that the twentieth century endowed Russia with surprising experience of creating and overcoming super complicated situations. The author believes that Russia can be a certain global teacher. The time came for learning Russia experience, viewing it from different positions (not excluding criticism) and using its positive lessons. This mission is entrusted to the international community of reflexologists. The “secrets” of Russian character, as a means for reflexive representation of public conscience, have to turn into constructive forces supporting global stability. “The key traits of this character are: greatness of spirit, open looks at the future, and universal responsiveness,” the author convinces us.

E. G. Zadorozhnyuk
Doctor of History

ANDREI VLADIMIROVICH BRUHLINSKY



On 30 January 2002, Andrei Vladimirovich Brushlinsky, a great Scholar and Human, tragically died. Born on 4 April 1933, he could be 70 in 2003, with his life so suddenly interrupted.

Developing the studies of his teacher, S.L.Rubinshtein, just from the beginning of his scientific career he achieved amazing results that are of great interest to the theory of reflexive processes as well. Moreover, A.V.Brushlinsky was among the founding fathers of reflexive movement, and as a director of the Institute of Psychology, as a member-correspondent of the Russian Academy of Sciences and as a leading Russian psychologist he made his best to make this movement known by Russian and world scientific circles. When working out many facets of the theory of reflexive processes, he always emphasized the ethical component of thinking and required the reflexive control to be based on a solid and morally acceptable ground.

Meanwhile, the scope of his studies was wider. His works on problems of the human as a subject and his general theory of personality and socialization were appreciated by psychologists, philosophers, sociologists and other scientists.

World community of reflexologists, The Editorial Council and Editorial Board of "Reflexive Processes and Control" journal express their sorrow for the premature demise of this great Scholar and Human.

IN THE NEXT ISSUE:

What Is Rationality?

A. Rapoport (*Canada*)

Failures of Peacekeeping

V.A. Lefebvre (*USA*)

The Image of America in the Russian National Consciousness
and Russian-American Relations

A.G. Zadokhin (*Russia*)

Reflexive Processes in Cult Organizations

V.E. Lepsky, A.M. Stepanov (*Russia*)

and others

REFLEXIVE PROCESSES AND CONTROL

No. 2, July – December 2002, Vol. 1

“Cogito-Centre” Press

Yaroslavskaya St., 13, Moscow, 129366, Russia