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REGULATION OF THE SET

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ABSTRACT: THE COMPLEX STRUCTURE OF THE SET OF A SYSTEM REQUIRES A MANAGEMENT SYSTEM FOR ITS STABILITY. THEORETICAL SCHEMES OF THE STRUCTURE OF THE MANAGEMENT OF THE SET AND MANAGEMENT OF THE SIGNAL THAT PASSES THROUGH THE STRUCTURE OF THE SET OF THE SYSTEM BY THE BASIC PRINCIPLES OF REGULATION AND MANAGEMENT OF THE SYSTEM ARE SYNTHESIZED.

KEYWORDS: PSYCHOLOGY, SET, FORMALIZATION, THEORETICAL MODEL.

Introduction

The system sustainability is result of its ability to regulate its own behavior. The regulation of the behavior is implemented by the system set. The set has to possess resistance to external impact formation of a particular behavior. This means that the set uses a system of stabilization. "The set is not just an adjustment of the system, but it is also principles of its internal organisation"[1].

The regulation of internal and external stability of the system is hierarchically interrelated.

Method

The article presents a theoretical model of the control system of the set. The theoretical model is developed on the basis of the principles for the management of technical objects. The basic concept is that the management of biological and nonbiological objects are subject to the general principles:

- all actual systems are informationally opened to the external environment
- each element of the system can be object to external impact
- the signal flows through the links that form the structure of the system
- the feedback is a tool for stabilisation of behaviour

Regulation of internal resistance

The set of the system is made up of relatively stable subsystems: fixed, neutral and variable set. Each subsystem needs its own regulator.

[1] Шерозия А.Е. (1969) К проблеме сознания и бессознательного психического, Тбилиси, с. 254 [Sherozia A. E. (1969) For the problem of the conscionsness and unconscionsness, Tbilisi, p. 254].

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The many factors that impact the system and its subsystems evoke in them deviations from their normal function. It is necessary the regulator of the subsystem to be multifactorial.

The set Z can be regarded as a "black box" (fig.1). Signals that run through the set are in direction of input to output. They form the behavior of the system.

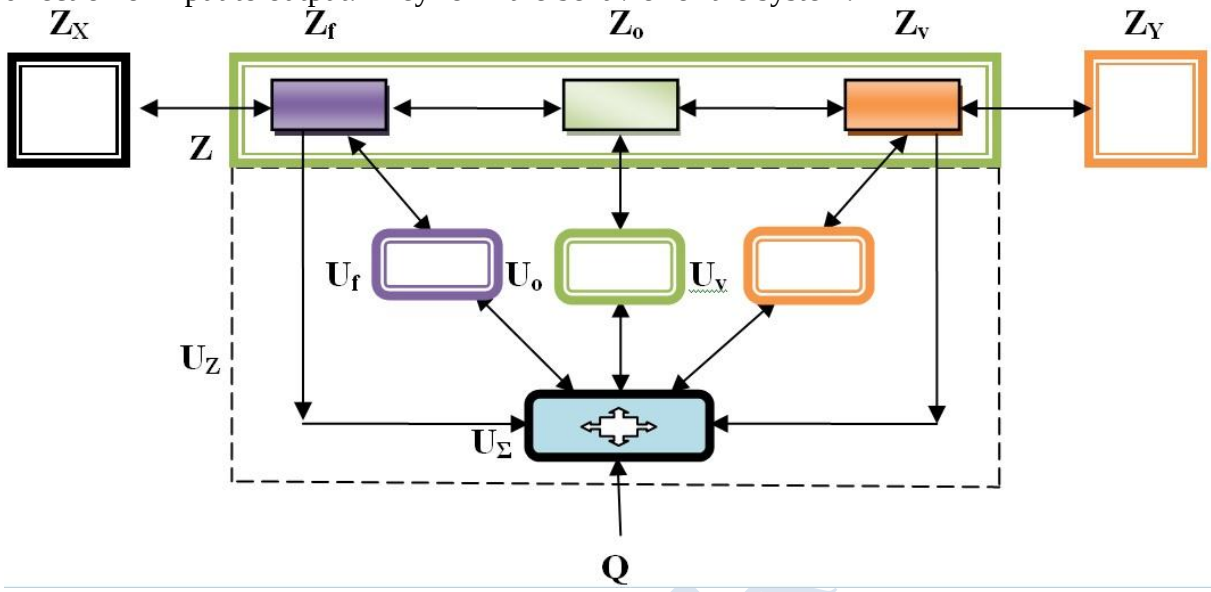

Fig.1. Scheme of regulation of the set Z of a system

Z_f, Z_o Z_v - fixed ($_f$), neutral ($_o$), variable ($_v$) set Z,
Z_X - set of an unidentified external impact on the set Z_f,
Z_Y – set of object with which the subject interacts,
U_f, U_o, U_v -regulator U of the set Z fixed ($_f$), neutral ($_{Oh}$), variable ($_v$),
U_Σ – regulator of regulators U_f, U_o, U_v,
U_Z – regulation system of the set Z,
Q - external impact on the U_Σ

The entrance of the information may be:

- variable set Z_v of the system; Z_v actively interacts with the external environment or with set Z_Y of the objects of the enviromuent
- fixed set (attitude) Z_f of the system, which forms a genetically programmed modifications or it is object of unidentified impacts Z_x
- neutral set Z_o of the system, which forms the translation problems of the importance of the signals that circulate between variable and fixed set.

The exit of the information may be:

- variable set Z_v of the system - as a tool for interaction with the external environment
- fixed set Z_f of the system - as a strategic regulator of the system
- neutral set Z_o of the system - as a mediator between variable and fixed set of the system.

It is possible to shift repeadly the position of the input and output signal in the process of interaction of the system with the external environment.

The regulators stabilize and in particular, develop the structure and behavior of the system.

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The signals that run through the regulators for stabilisation U_f, U_o, U_v are in the direction of output to input. They form a negative feedback to the relevant subsystems of the set.

The regulators U_f, U_o, U_v can form a signal that stimulates specific system development. This signal can be transported from input to output of the system.

Therefore, regulators U_f, U_o, U_v have behaviour of both the external and internal sets of the system. These regulators selectively filter signals through them.

For example, one can look at, but not to see; one can listen, but not to hear. One could exclude many or all the senses under stress or a high degree of concentration. In terms of deep meditation can block the signals that come from a fixed set. This means that the behavior of regulators U_f, U_o, U_v is coordinated by the corporate regulator U_Σ . He performs the role of programmer of the behavior of the system. The regulator U_Σ adjusts the system depending on:

- the stage of the individual development of the system
- external interference Q.

The increase of noise level Q above a certain level:

- reduces the role of variable set in the formation of the adequate reaction of the system
- raises the importance of the fixed set, which forms proven solutions.

For example, the mentally unsustainable man adheres to the traditions in higher degree. He automatically increases the proportion of fixed set in its behavior. And vice versa: the energetic and focused man activates in high degree its variable set in a particular direction.

The example illustrates the possibility the regulator U_Σ to filter the information and so to alter the relative share of participation of variable, neutral and fixed set in the process of searching for a solution.

In the process of individual development one can rethink some of its principles:

- from strategically important (a form of fixed set) to transform them into principles with a higher degree of interoperability (a form of the neutral set)
- part of the tactical principles can be shifted to the position of strategic principles of behavior. For example, the refraining from a sudden reaction in juvenile impulsiveness.

The regulator U_Σ harmonises the involvement of these principles of existence in an overall idea for optimal behavior.

The set of a system Z is the converter of information for the new solution. It is for stabilization of the system or to its development.

The system U_Z for regulation of the set Z is aimed at converting the information that is associated with the sustainable functioning of the set of the system.

Regulation of external resistance

The transforming ability λ of the system characterizes by its ability to change the set of own or of another system.

The flow of the transformations goes by chain from different units of the set of the system. The ratio between the output signal and the entrance of this chain forms the gear ratio. It is characterized by the ability of this set to convert a specific signal. The signal is a model of a real transformation. By the gear ratio of the signals can evaluate the real possibility of the system to convert a specific object.

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On this basis, the transforming ability of the system can be defined as a product of the conversion capabilities of the dynamic units (subsystems of the set), which participate in search for a solution:

$$\lambda = \prod_{k=1}^{q} \lambda_k , \quad (1)$$

Where λ - transformative capacity of the system formed by q simple dynamic units at zero external disruptive impact,

λ_k - transformative capacity of the system formed by the k-th elementary dynamic unit at zero external disruptive impact,

k - index of simple dynamic unit of the set of the system.

The external impacts depart the system from its stability. It is necessary to increase the current transformative capacity of the system to compensate for the deviation from the resistance. The additional transformative ability is formed by the low levels of organization of the system.

As a result, the transforming ability of the system grews consistently:

$$\lambda_{vv} \rightarrow \lambda_{vv}.\lambda_{ov} \rightarrow \lambda_{vv}.\lambda_{ov}.\lambda_{vf} \rightarrow \lambda_{vv}.\lambda_{vo}.\lambda_{vf}.\lambda_{ov} \rightarrow \lambda_{vv}.\lambda_{vo}.\lambda_{vf}.\lambda_{ov}.\lambda_{oo} \rightarrow$$
$$\rightarrow \lambda_{vv}.\lambda_{vo}.\lambda_{vf}.\lambda_{ov}.\lambda_{oo}.\lambda_{of} \rightarrow \lambda_{vv}.\lambda_{vo}.\lambda_{vf}.\lambda_{ov}.\lambda_{oo}.\lambda_{of}.\lambda_{fv} \rightarrow \lambda_{vv}.\lambda_{vo}.\lambda_{vf}.\lambda_{ov}.\lambda_{oo}.\lambda_{of}.\lambda_{fv}.\lambda_{fo} \rightarrow$$
$$\rightarrow \lambda_{vv}.\lambda_{vo}.\lambda_{vf}.\lambda_{ov}.\lambda_{oo}.\lambda_{of}.\lambda_{fv}.\lambda_{fo}.\lambda_{ff},$$

where $\lambda_{vv}, \lambda_{vo}, \lambda_{vf}$ - transformative ability λ of the variable set, including: variable ($_{vv}$), neutral ($_{vo}$), fixed ($_{vf}$) set,

$\lambda_{ov}, \lambda_{oo}, \lambda_{of}$ - transformative ability λ of the neutral set, including: variable ($_{ov}$), neutral ($_{oo}$), fixed ($_{of}$) set,

$\lambda_{fv}, \lambda_{fo}, \lambda_{ff}$ - transformative ability λ of the fixed set, including: variable ($_{fv}$), neutral ($_{fo}$), fixed ($_{ff}$) set.

It is known that the positive attitude to an object or to a process forms an increased performance, additional features from the set of the system. This effect can be seen as increasing of the throughput of the system in the course of the signal to the variable set.

The successive accession of new ingredients of the set in the process of searching for a solution may be illustrated by a block scheme of the Fig.2.

Each element of the set has negative feedback. This connection stabilizes the signal received at its input.

Each element of the set has a direct connection ρ. This connection carries over directly the signal in the input of the element. For example, the first imagination realises for a short time.

The assessment is complete. It includes ingredients that the process of searching for a solution has undergone.

For example, this assessment provides quick response to stress. The transformations inherent in the fixed set dominate in this reaction. The information about previous stress may start from a fixed to variable set.

It is necessary to eliminate the direct link ρ in the decision by stress situation.

The process of searching for a solution wanes gradually when flows through the elements of the set and when it circulates between the different levels of its structure.

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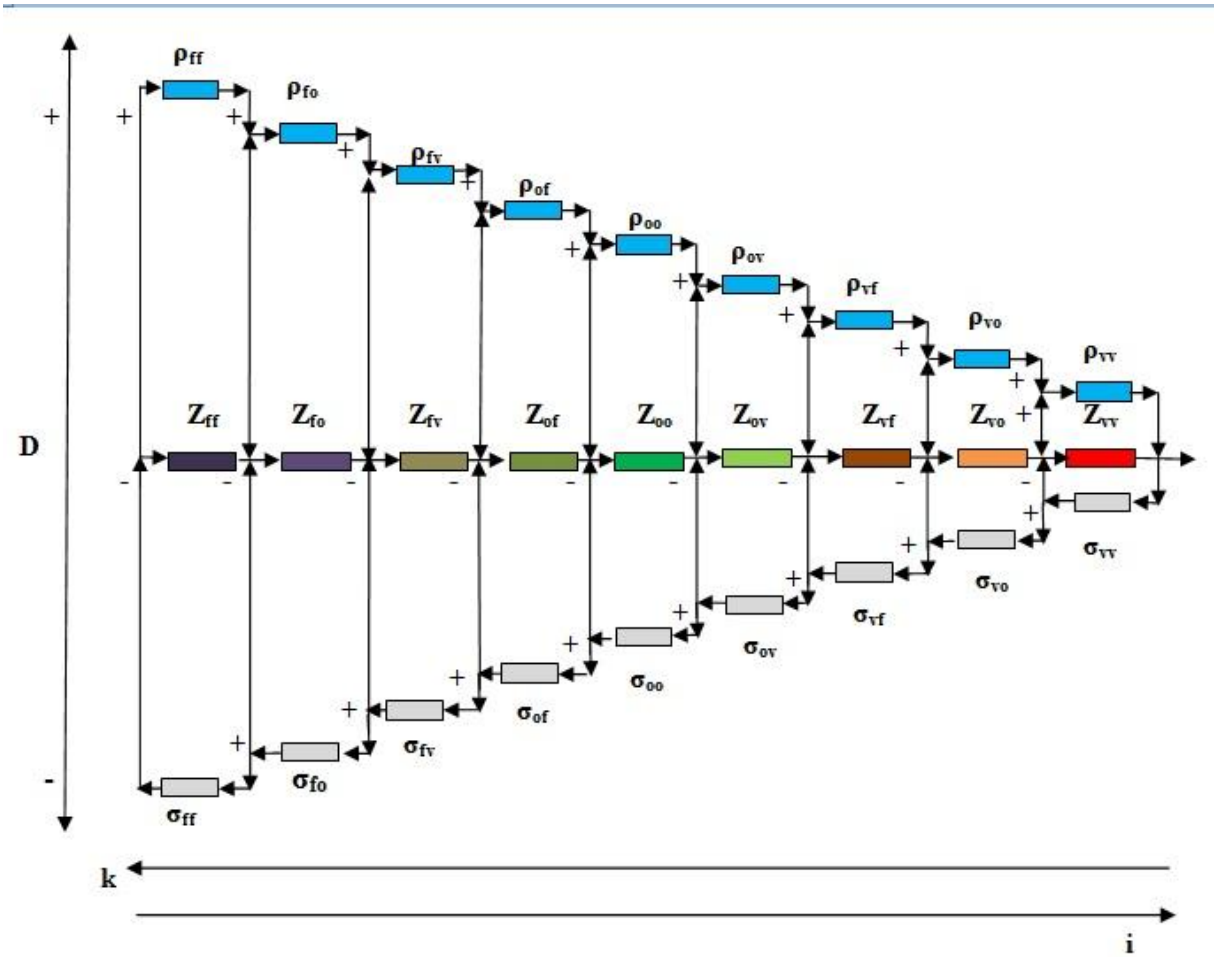
Fig. 2. Block scheme of the structure of the stabilisation of the set:



Z_{ff} , Z_{fo} , Z_{fv} - fixed ($_{ff}$), neutral ($_{fo}$), variable ($_{fv}$) sets of the fixed set
Z_{of} , Z_{oo} , Z_{ov} - fixed ($_{ff}$), neutral ($_{fo}$), variable ($_{fv}$) sets of the neutral set
Z_{vf} , Z_{vo} , Z_{vv} - fixed ($_{ff}$), neutral ($_{fo}$), variable ($_{fv}$) sets of the variable set
σ_{vv} – negative feedback of Z_{vv}
σ_{vo} – negative feedback of Z_{vo}
σ_{vf} – negative feedback of Z_{vf}
σ_{ov} – negative feedback of Z_{ov}
σ_{oo} – negative feedback of Z_{oo}
σ_{of} – negative feedback of Z_{of}
σ_{fv} – negative feedback of Z_{fv}
σ_{fo} – negative feedback of Z_{fo}
σ_{ff} – negative feedback of Z_{ff}
ρ_{vv} - positive relationship of Z_{vv}
ρ_{vo} - positive relationship of Z_{vo}
ρ_{vf} - positive relationship of Z_{vf}
ρ_{ov} - positive relationship of Z_{ov}
ρ_{oo} - positive relationship of Z_{oo}
ρ_{of} - positive relationship of Z_{of}
ρ_{fv} - positive relationship of Z_{fv}

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ρ_{fo} - positive relationship of Z_{fo}
ρ_{ff} - positive relationship of Z_{ff}
D – range of the control factors of the transformative ability λ
k – index of simple dynamic unit of the set, forming the transformation
i – the level of organization of the system, characterized by a degree of concreteness of transformative ability λ

For example, it is recommended that a person has to tell repeatedly the story of his stress with major details while it is fully depressed.

If there is a deviation from the internal resistance of the system (for example because of a genetic program), the transitional process is routed to the variable set and its decision shall be returned to the source, to stabilise it.

The structure shown in Fig. 2, allows to realize the deeply positioned negative feedback ($k \rightarrow q$) and the signal to return directly in the input (Z_{vv}). A similar process is the intuitive ray.

In particular, the signal can reach the specific position of the structure of the set and to stabilize through negative feedback in this position.

For example, as a result of the process of parenting occurs set-up of the fixed set. Similarly, an individual can be programmed at a certain level of its organisation to form a particular behaviour.

Results

1. **The regulator for stabilization and synchronization of the set of the system is part of this system.**
2. **The set of the system remembers the decision of a problem at all levels of its organization, through which passes the process of searching for a solution.**
3. **The modelling of the regulator of the set is the subject of an automation.**