

The University – a Rational-Biologic Model

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***Abstract.** The article advances the extension of the biologic rational model for the organizations, which are reprocessing and living in a turbulent environment. The current “tree” type organizations are not able to satisfy the requirements of the socio-economical environment and are not able to provide the organizational perpetuation and development. Thus, an innovative performing model for both the top and down management areas is presented, with the following recommendations: dividing the organization into departments using neuronal connections, focusing on the formatting processes and not on the activities, rethinking the system of a new organizational culture.*

Key words: linear structure; rational organizational system; rational biologic model; structural department; functional flexibility; organizational culture.

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JEL Codes: A13, C45.

REL Codes: 4C, 10Z.

1. The current status: the linear structure of the rational organizational system

After analyzing the actual university structures in Romania, one realizes that they often function by a mechanical model, a “tree”- type structure, of a single decision-making. This one focuses on the hierarchical structures (components), the linear causality (the proportionality between cause and effect), and the discipline-oriented vision, all of these in a static thinking model. In other words, it is an extension of over one hundred years of the classical scientific management (Taylor) and of the administrative theories (Fayol) in the concept of the pyramidal rigid organization.

The organizational rigid structure, of a linear type, ensures the quick transmission of the leader’s will (the rector, the dean, the chief of the cathedra/department) provided the existence of his remarkable cleverness, of his integrity, features of the one who takes the decision, states cannot be generalized.

The informational flows with the highest intensity are operated in three organizational hierarchic structures: The University Senate, the institute board, and the university department. For operable purposes, the three structures are replaced by rector, dean and chief of department.

The flows among the three identities are often of „top-down” type, and the ascending ones that ensure the feedback are often unstructured and informal. In these cases, an advanced bureaucratic process is generated, together with the entire unsatisfactory issues.

In high turbulence (reduced visibility and predictability) that results also from the lack of strategies and policies of continuity in the higher formation, the answer to the

requirements of the economical-social environment comes slowly and sometimes ineffectively.

The practical investigations revealed that many universities are rational organizational systems (SR), with a high structuring and formalizing, with a mixture of the open organizational systems (SD), without excluding some components typical for natural systems (SN) or for the closed ones (SI) – figure 1.a.

Institutionalizing of the market economy led to the enhancing of the open area (figure 1.b) to answer the new requirements in the work force, for an efficient use of the resources offered by the society for practical creative and group formation. Only a functional system, in which there are invested large amounts of money, can achieve its objectives.

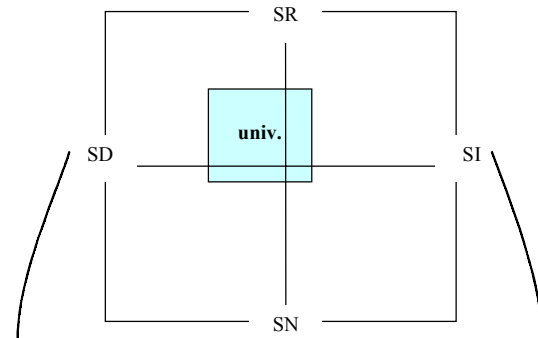


Figure 1.a

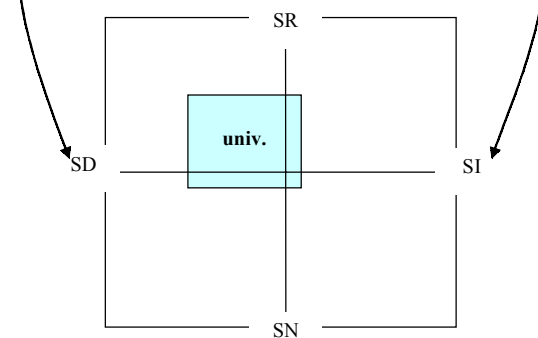


Figure 1.b

2. University as a rational biologic model Life cycle. General architecture

In our opinion the valid universities, the traditional ones, are also biological creations, as forms of structuring the living world, with the aims of adapting and perpetuate the social economical environment.

The biological life of a university has three essential steps, meaning:

i) Appearance, fundament that means the creation of an operational entity, characterized by inputs (human inputs), procession elements and outputs (human ones);

ii) The transformations that can be identified with the variety of the of the procedures for formatting and developing of the thinking and acting capabilities of the human elements; the natural selection or the fight for getting any type of resources, retaining and dissemination the knowledge and skills of the university members, also the fight for living or the competition with other similar organizations.

iii) The disappearance or closeout. The horizon of the universities' existence tends to infinite and it is the opposite of the "organizational ephemeris" and ensures the organizational integrity, due to the informational flows bi-directed from and to each member of the organization.

In the new proposed system, the entire approach of the universities is mainly based on the axis of perpetuation – adapting – developing – multiplying, in a system of disturbing factors, functioning tolerantly to component defects, and ensuring the organizational integrity. Perpetuation and adaptation mean or suppose that each generation turns better than the previous one, both in terms of inputs and outputs. Developing and multiplying must

not change the aim; otherwise the degeneracy/ devolution status appears. For example "university multiplication" and the university gigantic character are in inverse proportion to the integrity. In order to prove this concept we remind of the disappearance of the dinosaurs that can be identical with the extension of some Romanian Universities, in the entire national area, with the skid/slide-slips from the fundamental objective and focusing over the financial one. The distance learning, due to the IT system or BT system, must maintain a strict control on the speed of the information flow (values, norms, and orders), in a high competitive system (figure 2).

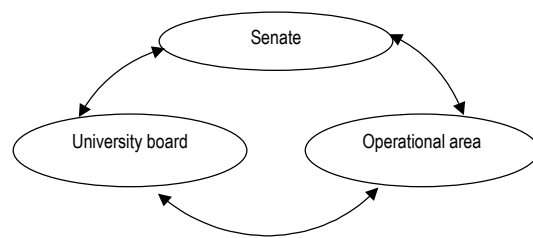


Figure 2. Impulses in three essential areas

The managerial system

The managerial system that appears in each of the three components in figure 2 ensures the functionality for a long period after the disappearance of one of them. This functionality aims a better adaptation to the environment, by the interaction of the university life components based on impulses (figure 3).

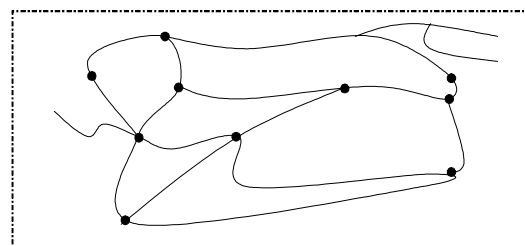


Figure 3. Neural impulses between all the components of the university system

- As a first component of the managerial system, the methodological system uses the methods of MBO, MBE, TCR type. For example, MBO focuses not only upon the objectives' deriving, but also on the harmonizing between them and the necessary resources (first of all the human and financial resources, which are the main issue in the university processes). MBE minimizes the functioning mechanisms at the effective operational level, for ensuring the organizational viability. The methodological system in universities will use the process of effectiveness of the genetic algorithms inspired from the methods of the species of animals and plants adapting to the environment that works on unalienable models, with a heuristic feature, operating with quality dimensions under undetermined conditions. The efficiencies will be multi-disciplinary, and the often-used method is TCR (total costs and risks function).
- The structural system of the universities (the bone system) is more flexible, that doesn't eliminate the top coordination and use of the best practices in the down area. The structures within the valid universities are "flat" instead of "tall", of a network type, the university personnel contributes to the activation of the structure that it is part of.
- The information flows are of network type, in many cases they are horizontal and as an exception they might be vertical. Among the Senate, the faculties Boards and the operational area there are multiple connections.
- The decision system uses procedures derived from a flexible network of connections (figure 4), the integration is realized by intensive communication, and the efficient solution is accepted by all components of the system.

3. Recommendations for creating and developing the new model

The progressive transition from the mechanic model to the biologic-rational one requires the transfer from the university cathedras system to the university departments that ensures the integrity and developing of all the components.

From practice, we sustain the concept that the university cathedra first answers the requirements of a faculty with a segmental view and not the social-economic issue. So a management department comprises every activity domains, specific to each organizational function (research – development, processing, commerce, and accounting – finance, personnel).

The self-satisfaction idea is eliminated from the activity domain and the scientific multidisciplinary integrity feature is enhanced.

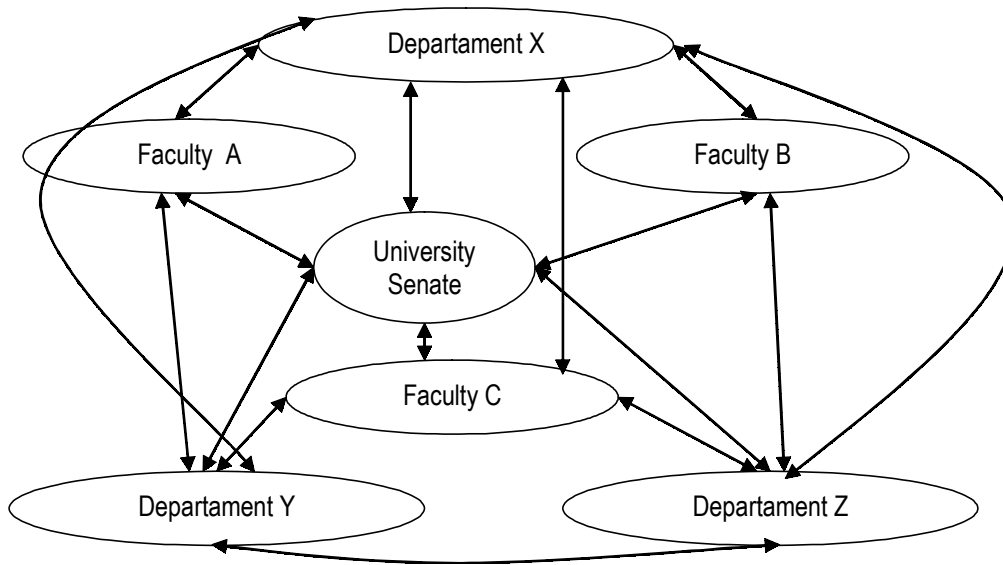


Figure 4. *Structural department organization*

In the given example (a simple one) the number of connections is $7! = 5040$. These are multiple ones, based on impulses. The multiple connections between departments-faculties that can be activated by the central neuron (the Senate) is produced and is efficient only due to the genetic algorithms, because the determinist models cannot be effective at $n!$ level (Moldoveanu, Pleter, 2007).

The internal neural network is connected to the external one, the network of the economic agents (including the great companies' leaders who had the university formation), or of the ones that were born top-managers.

Now the internal environment must be controlled and the external one must be attracted, the mega-environment, the two mutually influence each other, and their boundaries are diffused. We emphasize the fact that the "neural networks" inside or outside the universities provide/ensure the curriculum coherence, by a series of activities that creates value (value chain). The new concept is a real "university re-engineering",

which focuses on the process and not the activities. The support of the new value chain processes is the informatics' system for university formatting.

4. The new model and the human resources

In an aggregated programming process, at university level, the human resources are the students, the teachers, and the researchers. We will describe below – simplified – a learning-oriented university (without the research component), which has two kinds of human resources: students and teachers.

The student resource, as a dynamic dimension, with personality, contributes to the initiating and developing of a process of downsizing type, which means the enhancing of its role in the process of education and professional training.

The student is a neuron equal with the formative, and between them the informational flows multiply. In this way, the techno-centric management (gathered and

standardized) is gradually replaced by the anthropocentric management (personalized). The disjunction between the formative and the format is almost reduced. The anthropocentrism in universities does not mean the student's arbitrary discretion, but a strong judgment, the liberty of choosing the values and responsibility.

At the teachers' level, the second dimension of the human resources in universities, and without which the organization cannot exist, it is adopted a functional flexibility.

According to this concept and to the amplification reality, the teachers are able to undertake a variety of didactic tasks, without specializing in a certain domain. That is why we suggest the *horizontal flexibility* that allows the teachers become multidisciplinary, and also the *vertical flexibility*, that allows getting the capabilities of undertaking their colleagues' activities, at higher or lower level of the organizational hierarchy. This concept's utility is sustained of the "processing philosophy". The detractors of this general theory in the current organizational analysis first refer to the maximum "productivity" on "segments" and to the temporary engagement. However, now and in the future the universities have very intense inputs and outputs, in relationship with the market requirements.

Human resources in universities (that are networks, not isolated entities) can be expanded with the experts of the socio-economical practice, who have institutionalized managerial functions. In the new network, the impulses between students, teachers and experts/managers become more frequent. The efficiency and effectiveness derive from the network, not from the entities, concept that is under the attention

of the excessive corporatism capable to provide its human resources in its own closed system organization. We sustain the concept that the university is a network of formatives, which can produce exceptional "neurons", state that results from the intensity of the connections between the human dimensions. The entire issue is about the operating these connections and then/in the same time, instituting them.

5. The proposed system and the organizational culture

The rational biologic model suggested for the university system means the transfer from the dominant organizational culture "bet on the organization" (or some "person" subcultures) to the category of culture formulated by Hofstede or the "work and certainty" subculture. Regarding the first typology designed by Hofstede, we consider that the university staff activity will be more and more individualism (Moldoveanu et. al, 2007) (which it is at the moment) in science, the direct immediate consensus is an ideal difficult to touch. Actually, the most developed departments in universities are based on strong characters, so that to allow the independent thinking and action, without minimizing the system's integrity.

We think that the excessive Common sense (Moldoveanu, Pleter, 2007a), the dependence upon the "clan", don't bring benefits within the university, although there are networks between values and these are desired to be. Also the university members are sufficient independent in their operating area in order to improve it, avoiding the uncertainty, based on the behavior to rules and orders.

The two dimensions – Individualism and independence – allow the network treatment of the university process, everyone commit, the superiors in the empowerment process, the subordinates in the acceptance of the responsibility; the last ones are free to prove their skills, because performance is important for the entire system.

“The power action area” (Moldoveanu, Pleter, 2007b) in the analyzed system is more and more minimized; this is the first feature of the subculture elaborated by Hofstede.

The new system also contains the masculinity (Moldoveanu, Dobrin, 2007), starting from the individual to the entire system, it is desired a controlled profit, far from the “money dimension” in the business world.

The four dimensions: individualism, common sense, the power action area and masculinity form a completed symmetric graph as in figure 5.

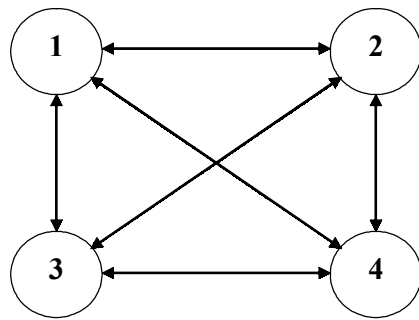


Figure 5. *The graph of the cultural dimensions*

There mustn't be excluded any “arches” between the “nodes”, the approach is configurative and not contingency.

In some universities where the personalities are restricted, the subculture “work and certainty” is accepted, as a function with two variables: the minimized risk, the high feedback.

The two variables, especially the later, are emphasized by the new advancing system based on stringent criteria and periodical evaluation to acknowledge the value.

6. Conclusions

Among the multitude of actual organizations, the performing universities (the kind quite frequent in Romania), come closer to the biologic models, which are superior to the artificial ones. The human being is a model much more performant than the one issued by the actual managerial thinking.

We sustain that a university is the opposite of the congenital organizational ephemeris, it is an efficient creation on long term; its components are designed to function tolerantly to component defects and to ensure the organizational integrity.

In the university background, the perpetuation, the adaptation, and the survival are genetically provided, naturally, and each generation has a lot of individuals more adapted than the previous ones, although there might be individuals from the previous generation who have superior performances to the actual generation.

In this concept of the universities, the “actors”, the structures, the procedures, and the values may change, but the evolution is provided by the “chromosome”.

The simple rules issued by the genetically algorithms, as the mutation and cross-breeding (Moldoveanu, Pleter, 2007, Moldoveanu, Roșca, Pleter, 2007) may be extended in university developing, in order to find new solutions in the development of the education and training process.

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