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ΔΙΕΘΝΗΣ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΙΑ
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ORGANIZATIONAL EFFICIENCY AND THE CONTRIBUTION OF SYSTEMS THEORY AND SOCIOCYBERNETICS[1]

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I.

In this paper we would like to point out how *systems theory*[2] and *cybernetics of social systems (sociocybernetics*[3]*)* can contribute to the

[1] Presented during the 6th Dialectical Symposium of the *World Philosophical Forum*, in Athens, has been submitted to the *Anadrasis* scientific committee afterwards, for publication in the abstracts of the *International Philosophical Forum.*

[2] See M. De Cleris "The Evolution of Systems Thinking", in M. De Cleris, (ed.) *Systems Science Manual,* Athens, 1991, pp. 13-24; R. R. Delgado "Systems Theory: Main Topics and Concepts" in M. De Cleris (ed.), op. cit. pp. 25-44; J. A. Busch and Gl. M. Busch, *Sociocybernetics, A Perspective for Living in Complexity*, Social Systems Press, 1992, pp. 94-118 (where reference to the "World of Systems"); F. K. Berrien, *General and Social Systems,* New Bruswick, Rutgers University Press, 1968; W. Buckley, *Sociology and Modern Systems Theory,* Englewood Cliffs, Prentice-Hall, 1967; L. Von Bertanlanffy, *General Systems Theory: Foundations, Development, Applications,* New York, Braziller, 1975.

[3] See R. F. Geyer and J. van der Zouwen, "Introduction" in R. F. Geyer and J. van der Zouwen (eds), *Sociocybernetics,* vol. 1, Leiden, Martinns Nijhoff Social Sciences Division 1978, pp. 1-13; N. Wiener, *Cybernetics or Control and Communication in the Animal and the Machine,* Cambridge, MIT Press, 1961; F. Baumgartner, T. R. Burns and P. De Villé, "Actors, Games and Systems: The Dialectics of Social Action and System Structuring", in *Sociocybernetics,* op. cit., pp. 27-48; F. Geyer and J. Van der Zouwen "Introduction", in F. Geyer and J. van der Zouwen (eds), *Sociocybernetic Paradoxes, Observation, Control and Self-steering Systems,* London, SAGE, 1986, pp. 1-8; Er. Laszlo, "Systems and Societies: The Basic Cybernetics of Social Evolution", in F. Geyer and J. van der Zouwen, *Sociocybernetic Paradoxes,* op. cit., pp. 145-171; J. van der Zouwen and F. Geyer, "Epilogue: Sociocybernetics as the Evolving Interface Between Social Science and Cybernetics", in F. Geyer and Johannes van der Zouwen, *Sociocybernetics Paradoxes,* op. cit., pp. 206-213; John A. Busch and

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increase of the *efficiency of organizations* in general. Our modern society is complicated and the quantity of interrelations and interactions among the particular groups, organizations, institutions and structures, is increased (included the interest conflicts among individuals, groups and classes). Much more, if increase cannot be controlled easily or cannot be controlled at all, thus *entropy* of the whole society tends also to be increased.[4]

It is known, in general, that cybernetics fights against *entropy*[5] or contributes to the increase of *the efficiency of human action* regarding any field of reference. Sociocybernetics (SC) fights more specifically the entropy which is developed in the *field of systems of social relations* or contributes to their understanding. Thus, it contributes to the increase of efficiency of human action, as it focuses on the better possible organization of social relations systems.

Gladys M. Busch, *Sociocybernetics*, op. cit., pp. 272-280; Ph. Nicolopoulos, "The Potentialities of Sociocybernetic Model in Accessing Political Performance in a Non-Stable Society", in Francisco Parra-Luna, *The Performance of Social Systems, Perspectives and Problems*, New York, Kluwer Academic / Plenum Publishers, 2000, pp. 119-129.

[4] Entropy is the *measure* of the *degree of disorganization* in a system. The opposite (to the entropy and disorganization) direction is "information", "organization" and *negentropy*. See D. K. Bailey, *Social Entropy Theory*, Albany, SUNY Press, 1989.

[5] See Ph. Nicolopoulos, op. cit., pp. 121-128.

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Sociocybernetics doesn't deal only with collection and analysis of data of social relations in *quantitative terms* (use of computers, statistical analysis of collected data, etc). The *qualitative approach* is also included for it is interested *to understand the meaning of social interactions* in systems and individual terms.[6] The increase of efficiency at social organizations and other collectivities is not connected only with *quantitative assessments*, for human units (social or individual) are not only "a total of numbers and quantitative measurements". It is based and it should be based also on *qualitative assessments.* Surely, the measurement issue is an important one. We should find the most appropriate measurement methods and techniques in quantitative terms, but always on the basis of a "spirit of synthesis" with the qualitative approaches which are necessary for the understanding of human actions and reactions. The human and social systems cannot be reduced only to numerical relations. Such a reduction would be a mistake of a kind of "scientism".

[6] See F. Geyer, "The Challenge of Sociocybernetics", paper presented in the World Congress of Sociology (Bielefeld, 18-24/7, 1994), pp. 5-13; F. Geyer, "The Increasing Convergence of Social Science and Cybernetics", in *Cybernetics and Systems, Proceedings of the Tenth International Congress*, vol. 2nd (Bucharest, 1996), BREN, 1998, pp. 211-216.

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SC tries always to increase the efficiency of human actions as they are intended to organize the social relations, the operation of social systems and the relationship between individuals and systemic collectivities with the best possible way. And the final goal is always defined with *social criteria*, i.e. with priority *to the interests of the society* as a whole and especially *the interests of the developing classes and groups* and not the interests of predominant classes. The interests of the latter often are against the benefit of the other social strata, which are oppressed and many times exploited by them. *Society has always priority over the individuals,* although the latter should be considered as parts (sub-systems) of the whole social system (actors - subsystems) and their rights should be protected by Constitutional Law and the Human Rights Declarations.

SC belongs to *the 2nd order cybernetics*,[7] which fits better the non-mechanical systems, where the borders between system and its environment are not fixed with a strict way and the feedbacks are not

[7] See F. Geyer, *The Challenge of Sociocybernetics,* op. cit., pp. 5-14.

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only *negative* but also *positive* ones.[8] More generally, 2nd order cybernetics is associated not only *with observed* but also *with observing systems,* which depend on the former many times with a unique way (it embraces the whole *dialectical dynamics* between them). Additionally, SC focuses on social processes which are defined with the sense of the "self", i.e. it gives priority to processes which include "self-development" of social entities, processes coming "from within" and are not dependent on external factors.

So, if cybernetics contributes to the *control of the environment* based on *the inputs* and the *right decisions (outputs)* of human units as systems, SC, as 2nd order cybernetics, contributes also to the control of the "self-development" itself of those units and its relations and interactions with their external environment. That's why it deals with *the meaningful and value dimensions of the human systems* and their interactions. It always focuses on those features on human systems, which differentiate them from the mechanical and only biological systems.

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[8] See J. A. Busch and Gl. M. Busch, *Sociocybernetics,* op. cit. pp. 183-186 (where M. Maryama's view for "positive feedback" is presented).

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The whole theoretical discussion about the *organizational efficiency* (EFOR) should be based at first on three main theoretical axes:

1) Clear definition of the concept of *efficiency (*EF) in general.

2) The understanding of the "reference level" with which our aforementioned concept is connected. We should know every time about which "social unit" (what kind of organization, group, network etc.) we speak. We should know the kind and the character of the human unit, the efficiency of which we are intended to measure. Our concept is always connected with some "organized collectivities", which can be perceived as organizations, groups, organized network of individuals. These units can be considered as *systems*, according to *systemic theory*.

3) The definition and assessment of *needs*,[9] which are supposed to be met by an "efficient" organization (OR).

In my work with the title "Eco-axiology and Measurement Problems of the Social Systems Efficiency with Respect to Sustainable Development"[10] I defined the EF of the total SS (TSS), namely the SS as

[9] See Fr. Parra Luna, *WHY SOCIETY, An Inquiry into its Consequences Through Systemic Axiology*, 1995, pp. 58-72, 79-88 (where reference to the "needs" of socio-cultural system).

[10] See Ph. Nicolopoulos, "Eco-axiology and Measurement Problems of the Social Systems Efficiency with Respect to Sustainable Development", in *Elohimjl*, Fr. Parra-Luna, El. Stuhler (eds), *Sustainable*

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a whole, based on the equation $EF = \frac{W}{Cxt}$ (W= work done by system, C=cost, t=time). The more we have work done by a TSS and the less we have cost and time, the more we have EF. But the difficult issue is to define exactly what is the work done by an SS as a whole and what the cost spent for that. All social scientists and philosophers do not adopt the same criteria and values. The SS is not a mechanical system and its performance cannot be measured only with a quantitative and absolutely objective way.

In the aforementioned work I Identified the W (TSS) with G (Goals) + PS (Ability of the SS to perceive the situation in which is found, *static approach)* + *PD (*Ability of the SS to perceive its internal dynamics and the dynamics of its environment, *dynamical approach)* + AD *(adaptation* ability) + CN (ability for *cultural continuity)* + *I (internal coherence* and *effective communication* of the parts of SS). So W (TSS) = G + PS + PD + AD + CN + I. In parallel I identified C (TSS) with NR + HC + AC + CO + SR (where NR = used natural resources, AC = artificial capital, HC = human capital, CO = social conflicts, SR = derangement of social relations). So, the initial equation changed

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to $EF(TSS) = \frac{G + PS + PD + AD + CN + I}{(NR + HR + AC + CO + SR)xt}$. In the case of the efficiency of an organization (EFOR), we can apply the same equation but the things are easier, because we measure the EF of a concrete social system, which is a subsystem of the whole SS. Surely, we should be much more exact concerning the particular organization and understanding and clarifying well (as much as it is possible) its *features* and *its goals.* Aristotle maintained for the whole universe that in *eidos (εἶδος) form* and *matter* are combined in the same entity. *Form* and *matter* constitute *the essence (οὐσία)* of an entity. And the essence is one of the basic *primary causes* of "being qua being".[11] The form associated with *τέλος (goal)* of each entity in the universe. You study the form of an entity and you can understand its goal (τέλος). That's why he believed to *enteleheia (εντελέχεια)* and accepted a kind of *teleology (τελεολογία)* for the world, i.e. everything has a goal, and the whole world has eventually a final goal connected with its ever strengthening *spiritualization*. I do not know if that perception (regarding the existing goals) is true in every entity in the universe, but in human organizations it is verified. But of course all the organizations are

[11] See Aristotle, *Metaphysics*, 1028β 3-1029α 15.

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not associated with processes of "spiritualization".

III

An organization is a *big collectivity established to carry out concrete specific goals,* which are connected with the interests of its members or part of them or even more with the interests of the whole society or with part of it. An organization (OR) has a *formal structure* (independently of its informal structure of power), a set of *rules,* probably some "identity symbols", *authority and power relations,* a kind of *hierarchy*, a division of labor and a limited (more or less) *membership*, (independently if its members have or do not have a real distinct strong identity with this OR as its reference point). OR is a large-scale and complex collectivity which pervades many fields of modern society. The size and structure of an OR makes it to differ from other *primary social groups* (e.g. family, companies of neighbors).

It is known that we have some theoretical approaches about OR. There is an *organization theory* (with multidisciplinary analysis of the structures, the dynamics of social relationships of an OR and its interactions with the broader social environment), and a more sociological approach called *sociology of organizations,* influenced by

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Weberian views for bureaucracy or *by Parsonian functional views* or by *human relations school*.[12] Since 1970s some radical sociological views developed against the "technocratic spirit" of *scientific management".* In parallel, *contingency theory* tried to synthesize elements of the scientific management with the role of *contextual variables*, while other sociological views focused on power relations and symbolic interactions in an OR.

Every organization has specific reasons and goals which refer to a social collectivity in parallel with its material resources. And these goals are not connected always with some supposed "social laws", but are connected more with human options, value preferences and priorities. So they are made by *individual and collective actors***.** If we do not define and understand these goals we cannot perceive well the *functions* of this particular organization in relationship with the whole SS, we cannot measure its EF and assess its whole performance.

So we should know exactly what we are intended to measure, for

[12] See T. Parsons, "Suggestions for a Sociological Approach to the Theory of Organizations", in *Administrative Science Quartely* (1), 1956; D. Pugh and D. Hickson "The Comparative study of Organizations", in D. Pym (ed.), *Industrial Society,* Harmondsworth, 1968; A. Giddens, *Sociology,* 2nd ed., Polity Press, 1994, pp. 284-307 (where extended reference to organizations); F.G. Emery (ed.), *Systems Thinking,* vol. one, Penguin books, Harmondsworth, 1981, pp. 299-421, where studies for the organizations by P. Selznick, F.G. Emery, E.L. Trist, E. Nagel, R.L. Ackoff and W.M. Sachs.

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which reasons and which social benefits. Organizations are complex collectivities, but do not work as "neutral units". They are always associated with a *concrete social context* (*class differentiations and conflicts, group conflicts*, cultural influences, predominant axiology and counter-axiology, activities of individual and collective actors, in few words *social dynamics* with many parameters: *structures and agency*). It is impossible to measure the EF of an organization as if it is a mechanical system. *Qualitative characteristics* and *dimensions* of the aforementioned context it is not possible to be measured. Therefore the EFOR regarding the handling of these characteristics and dimensions cannot be "captured" by quantitative terms. We can do assessments based on some axiological criteria. I have already mentioned the social criteria by which the final goal of SC should be defined. If we have a right consciousness of the *axiological character* of our decisions, options and preferences, we understand *the limits of the efficiency measurement process*. For example the goals of an organization of social policy are different compared with the goals of a corporation. They have (between them) big differences (from the axiological point of view), so the way of "measurement of their efficiency" should also differ. In general, we should be very reserved for a pure *positivistic approach* to EFOR.

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IV

Systems theory and sociocybernetics facilitate *the whole measurement and assessment of EFOR* because*:*

1) They conceive of organizations as social systems (i.e. the collectivities are conceived of as wholes *greater than their particular parts*, from which they are consisted of; the relations among the particular elements *are not accidental* but are arranged and regulated on the basis of a concrete setting).

2) Systems are associated with the critical issue of *hierarchy* and with its consequences for the function of the whole organization.

3) They put to discussion from the very beginning the issue of *values (value subsystem*), which are considered as having a *relative autonomy* as "subsystems" and are not only a "reflection" of the *economic base.*

4) They approach the organizations in a *rational way* and study the best possible *harmonious relations* among their particular elements. Surely the whole philosophy of systems theory is based on a *rational* and

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balance approach. However, in the real world of *social dynamics*,[13] where we have interest and group conflicts and situations without the supposed balance of the involved parts of systems and of various actors, it is doubtful if the aforementioned approach is the appropriate one. That's why one should be ready to accept *unstable social situations* and the *breaking up of systemic forms*, if the pressing social content tends to overthrow them. The "harmonious relations" are not found always in social dynamics. It is only the most "optimistic" aspect of that dynamics. *Conflict dynamics* (in which the irrational element is not absent) also exists and systems theory cannot always cover it easily. Social contradictions cannot be managed easily by "good will" rational social mechanisms. Systems' approach is a possible approach, but the *conflict approach should be taken also in consideration*, because *conflict dynamics is a part of social reality*. I maintain that the combination[14] of the aforementioned approaches methodologically is more preferable. That's why in the field of social phenomena the 2nd order cybernetics

[13] See Ph. Nicolopoulos, *Politiki Anaptixi ke Kinoniki Dinamiki* (Political Development and Social Dynamics), Athina (Athens), Papazissis, 1995, pp. 221-227.

[14] Ibid, pp. 203-257.

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(with *positive feedbacks*) is more appropriate compared with the 1st order one.

5) They try always to find a correspondence between *inputs and outputs*.[15] They study the influence of outputs on inputs and vice versa through *feedback (negative and positive feedback loop*). They study the control of the environment and of the actors' or collectivities' "self-development", based on data as inputs, and on the *decision making process,* as it is based on feedbacks.

6) With the so-called *2nd order cybernetics* we study processes as *self- reference, self-steering, autocatalysis, cross-catalysis, autopoiesis, meaningful communication, bifurcation tension",*[16] and this study help in handling *unstable* and *changing conditions* and in the measurement of this handling.

7) They can help for the measurement of the capability of an organization to contribute to *change process* (positive feedback).

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[15] We can also speak about the *feed forward process,* when the inputs of a system determine its outputs, while *feedback process* means that the outputs of a system return as a part of its inputs. See F. Geyer and J. van der Zouwen, "Epilogue: Sociocybernetics as the Evolving Interface Between Social Science and Cybernetics", op. cit., pp. 210-211; Fr. Parra Luna, *WHY SOCIETY,* op. cit., pp. 39-51, 58-72; N. Wiener, *Cybernetics on Control and Communication in the Animal and the Machine,* op. cit. 108-127.

[16] See F. Geyer, *The Challenge of Sociocybernetics,* op. cit., pp. 8-14.

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8) They can help for the measurement of efficiency regarding the fight against *entropy*.

It is obvious that in that paper I tried to highlight the way through which SC can contribute to the assessment of *organization performance* with *social criteria*. More broadly, I tried to combine the *spirit of cybernetics* with a real social concern, specifically in the field of organizations: searching how we can increase the organization performance in order to *cover social needs*, in order to *strengthen the quality of social life.*