The Scalar Model of the Temporal Units within the Geographical Space

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Introduction

The scalar model of the temporal units within the geographical space and consequently within the analyzed space is useful in establishing the status of the geosystem variables. The scalar model allows the analysis of the geosystems from continuum – discreet manifestation point of view in concordance with their holarchy. The continuous time of evolution of the geosystem is comprised of phases of manifestation.

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The scalar model allows the analysis of the geosystems from continuum – discreet manifestation point of view in concordance with their holarchy. The continuous time of evolution of a geosystem of a certain holarthic level is comprised of phases of manifestation of the components within its structure, found on inferior levels of development (fig. 1).

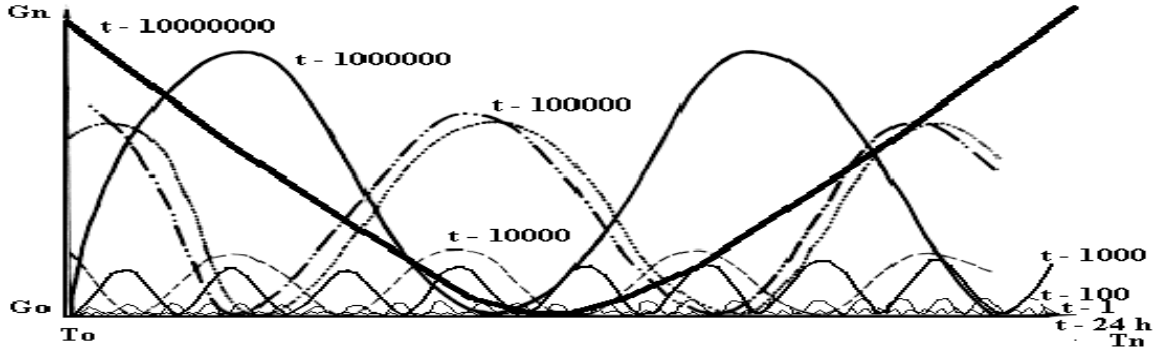

Figure 1. The general phase scalar model of temporal units within the geographical space.

No matter of the total duration of manifestation of a geosystem, its manifestation time is finite and marked by specific internal periods of time, which as a whole *make* the geosystem time.

The limits and the variables of duration of the internal periods of time are a consequence of the evolution of the structures and systems. It consists of: the the pre-emerging time (the time before the beginning/ developing of the new structure), the time/moment when the manifestation of the new structure is triggered (moment that coincides with the surpassing of the threshold/limit of manifestation when the energetic potential is maximum), the time of slow readjusting or fading away (when the inferior limit of the potential of manifestation is surpassed and the internal structure readjusted, making way for a new manifestation on a superior or inferior level of entropy).

There are different lengths of the periods of development of the system components which are due to the different evolutions of the environment in which they are found. As a result, specific temporal units for speed and length of manifestation in the systems of the disturbing factors/events induced by the environment, were introduced (fig. 2).

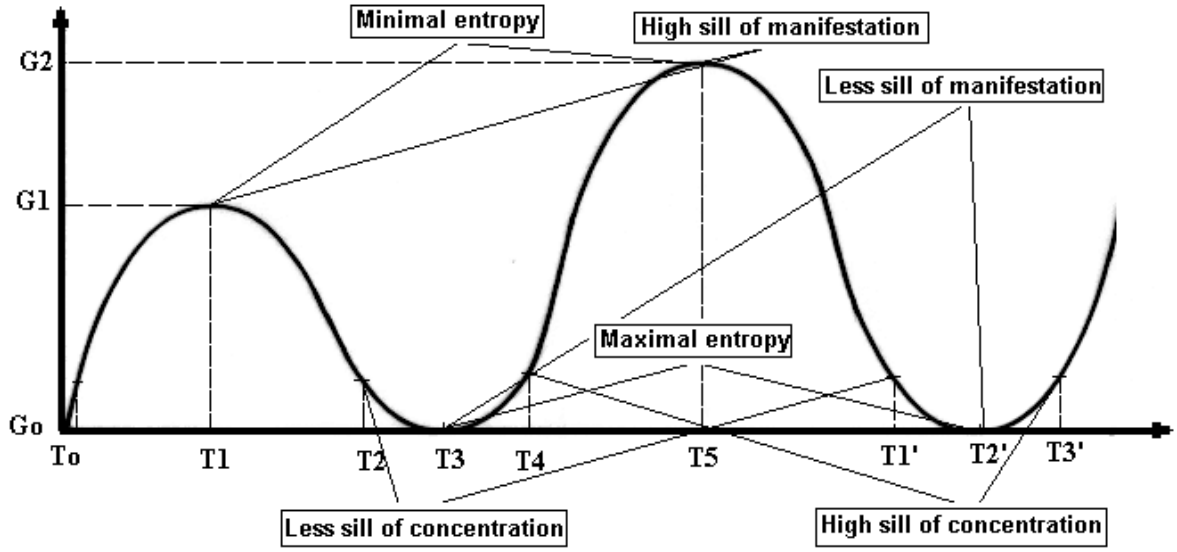

Figure 2. The temporal model for establishing the speed and propagation /transmission interval in the geosytem of the disturbing factors imposed by the environment: *T1-T2-relaxing time; T2-T3- the non-sensitivity time; T3-T4 – the sensitivity time; T4-T5 –the resting time ; T4-T1 – the maximum manifestation time; T2-T4- the relative dynamic equilibrium/balance time, with stages T2-T3- thermodynamic equilibrium/balance, T3-T4- the exit phase from the state of thermodynamic equilibrium on the basis of the newly resulted potential; T3-T2- the recovering time; G0-G1 – the intensity/amplitude of manifestation of cycle 1; G0-G2 - the intensity/amplitude of manifestation of cycle 2; G1-G2 – the difference in intensity/ amplitude between cycle 1 and 2 caused by a high-intensity disturbance.*

The resting time is defined as the time passed/elapsed since the disturbance occurred till the maximum response time, during which actual changes in the system take place (Petrea D, 1998). this time coincides/is the same as/ with time needed by the system to prepare an answer and depends on how complex and how big the system is. So, in small and simple structured systems, the reaction time will be shorter or even instantaneous meanwhile in big and complex systems the response is delayed but, it will inevitably appear.

The relaxing time is defined as the period of time in which the changes of the system entries is reflected in the stabilizing of certain processes or of the system (Melton, 1958). The emergence of external or internal disturbances of the system will determine a progressive readjustment of the systemic structure (which will be reflected in the shape, size, function and resistance of the system) at the new environment conditions and will cause the establishment of a new balance at another entropy level.

The non-sensitivity time is defined as the mean period of time that separates the state of maximum adaptability of the system at the environment caused disturbance factors resulted after an ample process of internal reorganization, with the intensity and amplitude directly dependent on the intensity of disturbance. The disturbance is the entropy eliminated by other systems and it may represent for some of the systems, especially for those less developed, normal entropy entries meanwhile they may be disturbance factors for highly developed systems. During this period of time the system has a maximum functional stability against the background of some minimal internal convulsions. This period is characterized by a minimal sensitivity to external disturbing factors (factors that have a continuous action and are structured on a large scale of intensity and typology). The non-sensitivity time is comprised between the inferior limit of relaxing time (the inferior level of concentration), which represents the moment when the internal reorganization ceased, and the inferior level of the systemic manifestation (which is the inferior limit of the sensitivity state) when the external disturbances surpassed in intensity the right/ optimum value of the systemic structure.

The sensitivity time is defined is defined as the mean/average period of time that separates relevant events (disturbances) for the system, that trigger a new cycle of manifestation and readjusting. The sensitivity time is comprised between the inferior level of manifestation (that coincides with the moment when the disturbance factors surpass the intensity optimum of the systemic structure and the functioning is done according to the level of tolerance) and the superior level of concentration (this time interval is the transition zone or the Relative Pessimum - Kovalski, 1977 - and the limit/threshold represents, the moment when the intensity of external disturbance factors is equivalent/ the same as and or is about to overcome the capacity of systemic tolerance). The length of this period of time varies greatly from one system to another according to the size and complexity of the system. So, as the size and complexity of the geosystem grows, so does the length of sensitivity time, because of the increased systemic tolerance and because of the high intensity needed by the disturbance factors in order to trigger a new cycle /stage of manifestation and readjusting.

The relative dynamic equilibrium /balance time – is defined as the mean period of time comprised between the inferior and superior level of concentration, when the system has surpassed the state of maximum activity where it has prepared a new internal order. This order will be preserved only for a short period of time till the emergence of new disturbance factors which through their intensity overcome the capacity of tolerance of the system causing readjustment of the internal structure of the geosystem. This time coincides with a period of relative calm of the systemic existence and it has variable length that grows with dimension and system complexity. The relative dynamic time represents also the period when the geosystem has a structure that is reorganized and superiorly adapted to the previous disturbances.

The maximum manifestation time is defined as the mean period of time comprised between the low and the high level of concentration, when the intensity of the external disturbing factors are equivalent or are about to surpass the capacity of systemic tolerance, causing internal structure readjusting (activities) inside the geosystems. The maximum manifestation time is composed of the resting time and of the relaxing time. The length of the maximum manifestation period grows with the growth in size and complexity of the geosystem. This phase time coincides with the period of great internal transformations and structuring of the environment. This period of time is unsuitable for interventions in the geosystem because of the decreasing internal stability and the increased vulnerability to external disturbing factors of the system.

The recovering time is defined as the mean period of time needed by a geosystem to regain a similar state as it had before the disturbance/ perturbation. It is comprised of two inferior levels of manifestation and is composed of the resting time, the relaxing time, the relative equilibrium time, which at its turn is composed of the non-sensitivity and sensitivity time.

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