A MODEL FOR THE MANAGEMENT OF CRISES AND SUSTAINABLE DEVELOPMENT BASED ON ORGANIC GROWTH STRATEGIES

I.   Abstract

The latest scientific theories based on biomimetics state that humankind must be able to learn from Nature in order to solve problems with an increasing complexity [1]. Therefore, a *global governance model* cannot be achieved until the model of a living organism is respected. Our model proposes a vision based on the logic of organic development of structures. Other authors [2] suggest a similar vision, but we also propose the methodology by which this is achievable.

This approach is suitable as a global governance model because on the one hand, biomimicry seeks sustainable solutions to human challenges by emulating nature's time-tested strategies, and on the other hand, the current pyramidal models have proven their inability to deal with the current complex and non-linear phenomena.

This is a mathematical model (i.e. fractal manifolds), which encompasses eight types of interrelated networks, each type of network being associated with a different institutional-social level that has a specific functionality. The design of the model is based on nodes and vectors that are organized in hexagonal structures. These structures form networks, structured as layers, which are mutually correlated. The content of each node is established considering/via the "generating" principle, which will be explained in the next section. This principle ensures consistency and coherence in transmitting information between nodes, just as it happens in organic processes.

The model has several important characteristics that make it suitable as a tool for shaping inter-related structures: crises, solutions, programs, institutions or professional networks at any level of complexity.

1. The functional roles of global institutions which must be occupied in order to obtain reliable global governance derive from the model.

2. The model allows an optimisation of the decision-making process and forecast analysis in order to implement the decisions.

3. Through the principle of "fractalization", the model allows both the discovery of interrelated dimensions that generate different existing crises, and also the prediction of future threats that could be generated from existing ones.

4.   The model also shows the possible decision-making paths (through circuits and cycles), the mandatory paths that need to be followed (establishing specific nodes), and it allows to identifying the possible consequences of inappropriate decisions (through the "fractalization" and "generating" principles)

With an overall perception on multiple levels of complexity, the possibility of developing an efficient administrative system that restores global sustainability is generated.

1. **The global institutions**

In this model, global institutions will be characterised/ defined based on their functionality within the global context. The subcomponents will have different roles depending on the context that generated them. Therefore, seven Institutes and nine Councils have been identified, which will be part of the global decision-making process. Their area of responsibility is described in Section II (Description of the model). The Global Councils will have the role of an interface between Global Institutes and the eight types of professional networks. Also, both the Councils and the Institutes are interconnected, so that a problem will not receive a unique solution. One of the most important features for achieving a reliable Global Governance is the development of professionals that fulfil the functionalities and sub-functionalities required by the model.

2. Regulation of the institutions' activity

For each network and Institutions/Councils, there are different paths which regulate their activity.

- Intra-institutional paths, that define their functionality
- Inter-institutional paths, which establish the communications between two institutions
- Trans-institutional paths, that define the communication roads between more than two institutions.
- Inter-networks paths, between the eight networks - the common convergence points (nodes) allow the transfer of information between them, so that the solutions found in one layer can be accessed in/by other layers.

3. **Decision making paths and control mechanisms**

The decision making method is non-linear and can be made in relation to the functional networks. There are many mechanisms involved in this process:

1. Local mechanisms - when key deciding factors ('decidents') that are connected can collaborate in order to make a final decision.

2. Extended mechanisms - provided by the 5th and 6th networks, both characterised by great dynamics and internal evolution of information.

3. Global mechanisms - through contact points between networks, where information is transferred to the other networks.

4. Decision-making processes with feedbacks - information from the networks goes to Councils and Institutes which will release decisional implementation plans at global level.

4. How key individuals and other decision-making bodies are to be appointed

The selection process of key individuals or decision making bodies that are to be appointed is carried out as an organic process, as follows:

- The most important feature of the decision-making bodies should be to be able to accomplish the functional role for which they have been appointed.

- The multilayer network model with different levels of fractalization allows organic-like structuring of professions and organizational institutions.

- Functional roles will appear around a problem that needs to be addressed, through the "generating" process.

- The interests, skills and abilities of different persons will find a place in the network through their functional role. Therefore a self-selection process will occur, based on the ability to contribute to solving a problem.

-The academic criteria or recommendations of trusted specialists can be used in order to evaluate the expertise of key individuals.

- Decision making bodies will organise themselves according to their mission in solving problems. The network of professionals with which they already collaborate will provide outstanding personalities able to find the optimum solutions.

- Leading positions will be occupied only by persons with proven integrity. The institutions cannot be corrupted by different groups of interests because the system will emphasise feedbacks and paths that will highlight the possible consequences of inappropriate decisions

We believe that without a proper shape, that respects the patterns of an organic development, reliable global governance can hardly be achieved. This model fulfils this goal through interconnected semantic networks, which characterise human society on multiple dimensions.