THE VIRTUOUS CIRCLE OF ‘SYNTROPY’ (VCS): AN INTERPRETATIVE CHAOS VS COSMOS MODEL FOR MANAGING COMPLEXITY

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ABSTRACT
The aim of this paper is to highlight how modern firms can minimize the complexity of the external scenario. Managerial practice focuses on the simplification of cognitive and decision-making uncertainty, but it cannot merely resort to linear and rational models. Therefore, ways of widening the range of cognitive variety in management have to be found. As a result, the ‘syntropy’ necessary to systems viability is ensured. This means a transition from environmental Chaos of ‘entropy’ to Cosmos for ‘syntropy’. In other words, through a series of phases, such as data collecting, information processing and viable decision-making, firms can map the context and transform “Chaos of scenario” in a “Cosmos of context”. In our approach, the Virtuous Circle of ‘Syntropy’ (VCS) is a useful tool to define Cosmos as a subjective context.

The paper is based on the Viable Systems Approach (VSA) and Neuro-Linguistic Programming (NLP) methodologies. The conceptual categories of VSA and NLP enable the qualifying of a model to reduce Chaos and simplify the implementation of decision procedures. The firm needs to apply these procedures not only with reference to Problem Solving, but also to Decision Making in order to achieve full contextual viability.

KEY WORDS Chaos | Cosmos | complexity | syntropy | Information Units | Interpretative Patterns | Value Categories | BSC.
1. Purpose

In an environment dominated by the rational assumption of ambiguity (Piciocchi, P., Saviano, M., Bassano, C., 2009), and the economic postulation of hyper-competition (D'Aveni R., 1994), the viability of the firm as a system depends on the ability of the government (top decision maker) to adopt complexity patterns and models (Simon H., 1969), which allow, on the one hand, the appropriate reading of the environmental dynamics and, on the other hand, the right decision making process resonating with the expectations of the context in which the firm survives. This implies:
1) the ability to use the owned variety (adaptability of the system);
2) the ability to provide the future variability (reduction of entropy).

The paper aims to propose a model that, exploiting the so-called amplifier of varieties or reducer of complexity (Beer S., 1972) to generate syntropy, allows a gradual shift from the Chaos Area (informative redundancy, poor lasting of data, decision-making complexity) to the Cosmos Area (informative simplicity, adequate lasting of data, decision-making complication) in order to ensure the viability of the firm as a system in a dynamic context.

Managing information-randomness-complexity process depends on the characters of the Informative Variety, distinct in: Informative Units, Interpretative Patterns and Value Categories (Barile S., 2009): these characters are able to normalize knowledge dynamics addressing the decision-making processes of the system.

This means that the viable system government (top decision maker) needs:
• **data collecting**, namely informative units or structural entities of the external environment;
• **information processing**, namely handle the data collected (models or surface structures versus identity or deep structure of the context) through the owned interpretative patterns that squeeze the redundancy and reduce the complexity;
• **viable decision making**, namely consistent with the identity of the context and with the value categories (deep structure) of the firm as a system.

Data collecting, information processing and viable decision-making are phases of a process of subjective simplification of complexity that the government creates passing by Chaos Area – complexity, problem framing and decision overloading (Rumia R., Bonini N., 2000) –, to Cosmos Area – complication, simplification of the problem and decision-making consistent with the context – (Fig.1).
The figure shows how the transition from decision-making entropy of the chaos to decision-making syntropy of the cosmos (phase transition area) qualifies a set of government behaviours (Kauffman S., 1993: 1995; Holland J. H., 1995: 1998):

1) enough ordered to ensure a temporary stability;
2) highly flexible, emerging and changing.

The interpretative Chaos vs Cosmos Model allows to amplify the cognitive variety and reduce the uncertainty of decision-making. This depends on the ability of the government (top decision maker) to subjectivize informative units and extract interpretative patterns, or models of reality that are consistent with the categories of the top decision maker (attitudes, values, history, identity, etc).

This allows the firm as a system to maintain the consonance with the context, to improve the sharing and the resonance with the supra-systems and achieve competitive advantages sustainable over time.

2. Methodology & Literature Review

The theoretical interpretative Chaos vs Cosmos Model is based on two methodologies: the Viable Systems Approach (VSA) and the Neuro-Linguistic Programming (NLP).

While VSA (Golinelli G.M., 2000:2009) addresses the system viability issue, or how the systems survive change thanks to the ability of the government (top decision maker) to be connected with the relevant supra-systems obtaining legitimacy and/or consensus; NLP (Grinder J., Bandler R., 1975; Dilts R., 2003), defined as an approach of cognitive modeling, suggests the
construction of subjective maps of representation of reality to interpret the scenario taking appropriate decisions to improve consonance and resonance of the firm with the supra-systems of its viable context. These maps, which are likely to continuous change in time, increase the capability of perceiving Chaos (simplification) and supporting the process of strengthening of the performance (viability) of the system through three fundamental phases (Piciocchi P., 2009):

1. selective attention (simplification process);
2. cognitive standardization (generalization process);
3. creative production (deformation process).

The capability of the government to interpret, according to their own patterns, the reality and to track cognitive maps is reflected, therefore, in value categories of VSA and the NLP. This allows management to pass by the Chaos Area to the Cosmos Area (Fig. 2).

Therefore, based on VSA and NLP approaches, this paper assumes a model of reducing the complexity that considers not essentially the resolution of complicated and/or complex issues, but the ability to make appropriate decisions to change (Barile S., 2009). This finding moves scholars and managers attention from Problem Solving to Decision Making, as a set of choices due to problems not enough detailed, in which it becomes difficult, if not impossible, to implement standard decision-making methodologies, based on a simple probability.
3. Design

The subjective interpretation of the context and the decision-making process require a phase of simplification. This simplification can be analysed in both the methodological approaches with convergent outcome. In VSA viewpoint, the acquisition of informative units allows to reach, through interpretative patterns and value categories of the top decision maker, a simplification of the decision-making complexity (i.e. environment vs context).

At the same result, but in other words, the NPL suggests to simplify through a model of reality (map) – that is not the reality in itself but what the top decision maker perceives by its own cognitive variety (Korzybski A., 1993) – to choose behavior patterns and, therefore, to make decisions. According to VSA and NPL approaches, the top decision maker reduces the scenario (chaos) to an ordered subjective representation (cosmos), in which the firm as a system must express its viability in terms of consonance and resonance. In fact:

<table>
<thead>
<tr>
<th>VSA</th>
<th>NPL</th>
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<tr>
<td>Informative Units (IU)</td>
<td>Structural Entities (SE)</td>
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<tr>
<td>Interpretative Patterns (IP)</td>
<td>Surface Structures (SS)</td>
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<tr>
<td>Value Categories (VC)</td>
<td>Deep Structure (DS)</td>
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Since the interpretative patterns (IP) are subjective representations, then the top decision maker simplifies the chaos through:

a) the extraction from the scenario (chaos) of a viable context (cosmos) in VSA view;

b) the construction of maps (SS = cosmos) to induce the Deep Structure (identity = chaos) in NPL view.

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**Fig. 3**

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The previous figure draws the process of simplification from Chaos to Cosmos which means the achievement of entropy reduction (syntropy increasing) in the decision-making process. The system expresses its viability in a sort of environment (macro-scenario).

This environment, unpredictable and complex, suggests the change (Chaos) in a proactive way: decisions must aim to ensure the viability of the system in tune with the context (Cosmos) without changing the identity of the firm.

The entropy reduction (syntropy increasing) implies that the top decision maker (government) needs to “read” the change (variability) for managing the scenario (Chaos) towards a state of complexity suitable to his cognitive variety: in other words the top decision maker can define successful strategies and/or behaviours. The Chaos vs Cosmos Model is able to support the decision-making process, the strategic behaviour and therefore the achievement of competitive advantages, by the cognitive variety of top decision makers. In other words, the ability to abduct, induce and/or gather Cosmos depends on the objectives pursued by the firm as a system and the managerial skills of the government (top decision maker) (Fig. 4):

In complex environments, the search for viability means the ability of the government to make decisions on the basis of a “knowledge” (Decision Making) and of a “know how” (Problem Solving), which represent the fundamental cognitive capital to survive in the context and build sustainable competitive advantages.

4. Finding

Due to the extreme uncertainty that characterizes the scenario and the difficulty of identifying proactive strategies consistent with the dynamics of change, the paper proposes a Model for Managing Complexity (Fig. 5).
This model, through a series of phases – data collecting, information processing, viable decision making –, tends to provide a temporary order (Cosmos), to achieve the systemic purposes (viability) and to pursue strategic objectives consistent with corporate mission and identity. The firm as a viable system (VSF) must survive in Chaos translating politics (VSF Deep Structure) in strategies and tactics. In this sense, it is necessary that the top decision maker knows how to collect data (Informative Units) from the scenario and how to put them in their own informative variety. Through a modeling process of reality, the Interpretative Patterns must be capable of representing, in a simplified way, the scenario in order to make appropriate decisions to the systems viability. These decisions constitute effective behaviours (surface structures) to be expressed in the context for the search of consonance and resonance. It is important that such behaviours are consistent with the strategic decisions taken by the government that represent the VSF Value Categories to align corporate personality and corporate identity obtaining consensus and legitimacy with the supra-systems.

The interpretative Chaos vs Cosmos Model facilitates the transition from a chaotic scenario to an ordered context, progressively reducing the entropy of the decision-making process and increasing the cognitive VSF variety.
The Cosmos Map, originated from the process of interpretation and modeling of reality (Chaos) has a temporary equilibrium: it is considered stable until the particular objective of the firm resists. With the change of objectives, the perceived scenario differs; so the firm has to re-activate the interpretative process for extracting a new contextual Cosmos. Therefore, the Chaos vs Cosmos Model must be considered in terms of circular causality and not simply in terms of linear process. The result is that government’s variety is enriched with fresh and different knowledge, useful to improve contextual ‘syntropy’.

5. Practical Implications

Despite of potential limits, the paper offers interesting reflections to test the utility of the model and to deepen its through future researches. The circularity of the model shows that the Cosmos is a “fuzzy” configuration; this configuration has to be continually monitored because there is always new Chaos to be systemized in Cosmos.

In any event, our findings show that, in a context characterized by environmental and cognitive complexity, it is possible to use traditional management techniques (i.e. Balance Score Card – BSC) in a systemic way. In particular, by adopting the BSC, government continually creates its “Strategic Map of the Context” which guarantees a continuum between the various objectives. Starting from the gap in terms of achieved targets and expected results, government activates a new decisional cycle “data-information-decisions” for consonance and resonance with the changing context.

Even if BSC Model has been improved – from an instrument to measure the performance to an integrated support of decision making – there are some limits. First of all, the BSC at the present:

1) does not consider the feedback-loop between multiple variables;
2) shows dynamic stiffness;
3) lacks a systemic view.

Therefore, Chaos vs Cosmos Model is able to solve at least part of BSC operating limitations. Indeed, the analyst can be stimulated by the action of modeling and simplification of the scenario made by top decision makers and ensure, on the one hand, a more efficient integration of detection tools and on the other hand, a more effective information to support decision making process.

However, in future research we intend to extend and verify our assumption.
REFERENCES


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