An Introduction to a Value Co-Creation Model. Viability, Syntropy and Resonance in Dyadic Interaction

by Sergio Barile[1] and Marialuisa Saviano[2]

Abstract

Purpose – This paper applies the Viable Systems Approach (*VSA*) to the study of individuals and organizations' viability, interpreting their life dynamics as interaction processes activated by the pursuing of goals and by the need to gain access to resources.

Design/methodology/approach – The paper takes the Viable Systems Approach as a framework of reference to draw theoretical and methodological contributions of systems thinking in business management.

Findings – A viable systems' value co-creation model is developed by integrating the contributions of several recent theoretical advances which propose a systemic interpretation of the concept of value. The *VSA* contributes to highlight the subjective, contextual, emergent and interactional nature of value, and to put forward a view of viable systems' interactions as value co-creation processes through which they synergistically achieve their goals by effectively integrating resources.

Research limitations/implications – The paper findings effectively deal with conceptual problems but should be integrated with empirical research.

Practical implications – The paper has relevant managerial implications that suggest that decision makers should open their minds to the exploration of new approaches by building on their capability of envisioning future scenarios and being committed in creating them.

Originality/value – The deepening of viable systems' interaction dynamics allows recognizing the syntropic action of the system's finality in activating interaction and committing actors toward a resonant achievement of their goals. A reverse causality hypothesis emerges, revealing the laws behind individuals and organizations' behaviour, and suggesting to rethink business management models by accomplishing a change in perspective from a past to a future based view.

Keywords – Interaction, Value Co-Creation, Viable Systems Approach (*VSA*), Viability, Syntropy, Reverse Causality.

Type – Conceptual paper

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1. Introduction

Starting from the interpretation of individuals and organizations as viable systems, i.e. open systems that aim to survive by establishing relationship with other viable entities, the purpose of this work is to reflect upon the conditions that allow systems to remain viable in their life contexts, trying to draw the laws that explain their behaviours.

Consistently with the aim of our reflections, we adopt the *Viable Systems Approach* (*VSA*) as a methodological framework of reference (Golinelli, 2000, 2010; Barile, 2000, 2009) useful to analyse the conditions of viability of business as well as social organizations. Our perspective leads us to focus on the relational context that systems create in their ongoing living dynamics to realize processes directed to the achievement of their goals. In particular, focus is on the interactions they develop with other entities that hold the resources necessary to the observed system's functioning, which, for this reason, are capable of exerting a power of influence on the system's life dynamics.

On the basis of the *VSA* interpretative framework, we argue that, given that any social entity acts according to a consonance/competitiveness relational logic, the possibility for (dyadic or multiple) interacting entities to achieve their goals by reciprocally gaining access to resources depends on their capability to create a harmonic relational context in which each of them achieves his/her own goals through what can be considered a *co*-creation process.

In the observed relational context, the actors' setting of goals results as the most relevant aspect to consider in evaluating their viability. The setting of goals, in fact, gives a finalization to the system and activates its interaction with other systems. Agreeing with literature proposing a reverse causality view of phenomena (Arndt, 1985; Kirkham, 1992; King, 2003; Vannini, 2006b), we argue that the systems' behaviour is influenced not much by past events but rather by the goals they desire to achieve in the future.

This change in perspective from the past to the future may represent a relevant contribution to business management helping understand the behaviour of decision makers in conditions of complexity in which the classical causality view results inadequate. We argue that this finalization aspect, although included in business management models, results disregarded in actual facts when a classical causality perspective appears to be still adopted.

By benefitting from this change in perspective, this paper looks at the interaction between viable systems as a co-creation process strongly influenced by syntropic phenomena (Di Corpo & Vannini, 2011, highlighting its implications for management. It is organized as follows. After a brief description of the *VSA* main assumptions, our interpretative proposal is discussed by focusing on the conceptual elements that characterize a typical viable systems' interaction context:

- *Actors* as viable systems and *context* as a recursive relational environment populated by sub- and supra-systems;
- *Resources* as means to achieve the viable system's goals;
- *Interaction* as a knowledge-based process;
- *Value* as the outcome of a co-creation process;
- *Syntropy* as a form of organisational energy which generates viability.

Our interpretative pathway leads to the development of a conceptual framework to study interactions between viable systems as value co-creation processes through which they synergistically achieve their goals by effectively integrating resources. Our approach, taking into account its systemic nature, leads to interpret value as:

- *subjective*, for it cannot be measured as embedded in objects and needs to be evaluated adopting a specific perspective;
- *emergent*, for it cannot be evaluated by adopting a static and structural perspective but needs a dynamic and systems view;
- *contextual*, for the process through which it is created dynamically depends on the conditions of context;
- *interactional*, for it implies a multi-actor process through which it is *co*-created.

Therefore, to understand how systems remain viable in their contexts, it is necessary to understand how they effectively interact with other entities by integrating resources and creating the conditions for the value to emerge.

2. The *Viable Systems Approach* fundamental assumptions

In the second half of the last century, many scientific communities have attempted to develop models able to represent reality and its dynamics through the adoption of system theory (von Bertalanffy, 1968; Parsons, 1971; Beer, 1972; Maturana & Varela, 1975).

More recently, in this context, management scholars and researchers have shown a growing dissatisfaction with existing models and techniques, stimulating a rethinking of management approaches in search of a more satisfactory scientific method, expected to be able of supporting decision making in complex contexts ((Barile, Pels, Polese, and Saviano, 2012). As a result, starting from the early works of Barile (2000) and Golinelli (2000), the *Viable Systems Approach* (*VSA*) has been developed within the disciplinary field of business management by building upon an updated version of the Viable System Model of Stafford Beer (1972) and building on the theories of open and closed systems (von Bertalanffy, 1968), the socio-technical systems (Emery & Trist, 1960), the law of requisite variety (Ashby, 1956), and the systems dynamics (Forrester, 1994). The main goal of the *VSA* research community is to address the issue of decision making in conditions of complexity, overcoming the limits of a traditional deterministic view and of a classical logic of causality considered inadequate to understand reality (Barile, 2009a; Saviano & Berardi, 2009; Barile & Saviano, 2011b; Saviano & Di Nauta, 2011).

The interpretative paradigm of the *VSA*, developed into a structured methodology of government, reduces its fundamental premises and key concepts to five postulates (see Table 1). These five postulates represent the main assumptions that needs to be agreed on to apply the *VSA* to both interpret and govern business as well as social phenomena (Barile, Pels, Polese and Saviano, 2012).

Table 1 - The VSA Postulates

Survival	A viable system, embedded in a specific context, has the primary purpose of survival.
Eidos	The viable system in its ontological qualification may be designed in a double perspective: that of the structure and that of the system.
Isotropy	The viable system is characterized by two logically distinct areas: that of decision and that of action.
Interaction	The viable system, in its existential dynamics, is influenced in the pursuing of goals and in the achievement of objectives by the interaction with the supra- and sub-systems from which and to which, respectively, elicits and provides guidelines and rules.
Exhaustiveness	For a viable system all external entities are viable systems or rather they are components of an upper level viable system.

Source**:** Adaptation from Barile, 2008: 24.

On the basis of the *VSA* main assumptions and fundamental concepts (Barile & Polese, 2010), in the next section we will focus on the conceptual elements of a *VSA* framework useful to interpret interaction between viable systems at a dyadic level but taking into account the multiple influence dynamics deriving from a typical multi-stakeholder context.

3. Conceptual elements of a viable systems' interaction model

3.1 Actors as viable systems and context as a recursive relational environment

According to the *VSA*, any individual or organization, which we generically name actors, can be viewed and studied as a viable systems entity.

A viable system is a "system which survives, remains united and is integral, is homeostatically balanced both internally and externally and possesses mechanisms and opportunities for growth and learning, development and adaptation, which allow it to become increasingly effective within its environment" (Beer, 1972).

Three *systemic* conditions are necessary to the qualification of a system and characterization of viable entities (Barile, Pels, Polese, and Saviano, 2012: 63):

- *(partial) openness*, which is the ability to exchange resources with other systems of the context in a selective manner;
- *contextualization*, which is the search for viability through interaction with certain privileged entities that act as supra-systems influencing the observed systems survival;
- *dynamism*, which is the development of structure in accordance with emerging changes.

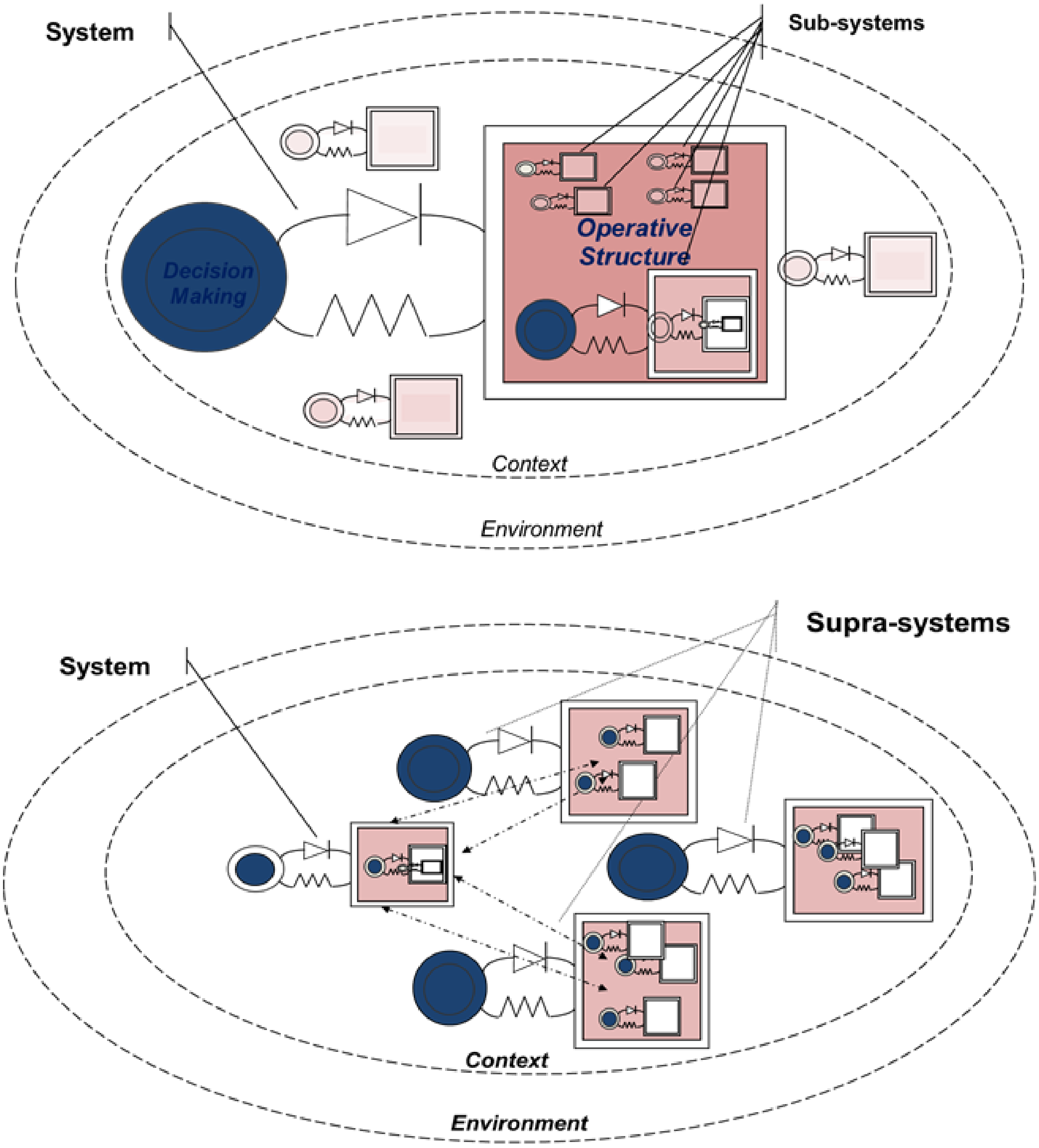
By adopting the *VSA*, we can investigate any individual entity or social organization as a viable system whose characterization and dynamics satisfy the *VSA* postulates' assumptions and the above listed systemic conditions. It should be noted that we can see various systemic levels in a social interaction context, as follows:

1. Individuals;
2. Organizations (from families to institutions to enterprises, etc.);

3. Networks of organizations.

These systemic levels, which represent the possible perspectives to adopt in the analysis of interaction processes, are not separated. There are, in fact, multiple interconnections that link them in a multilevel *recursive* scheme, defining their internal and external relational *contexts*, as illustrated in Fig. 1.

Fig. 1 - The viable systems' internal and external recursive contexts



Source: Barile & Saviano, 2010. www.asvsa.org. Reprinted with permission of ASVSA.

3.2 Resources as means to achieve the viable system's goals

Depending on the kind of process they need to accomplish, viable systems require to have access to certain resources. The notion of resource is fundamental to understand the living processes of viable systems, especially in a business context. Within the Service-Dominant Logic research stream (Vargo & Lusch, 2006), a distinction, useful to analyze the interaction processes of viable systems and consistent with the *VSA* perspective, has been drawn. The *VSA* refers to this distinction as the *operand/operant* resources. Operand resources are "resources on which an operation or act is performed to produce an effect" (Constantin & Lusch, 1994: 144). Operant resources are, instead, "resources which are employed to act on other Operand Resources or Operant resources" (Constantin & Lusch, 1994: 144).

According to the *VSA* perspective, viable systems act as operant resources that 'use' operand or other operant ones for accomplishing their living processes. The relevant characterization of viable systems as operant resources is their knowledge endowment. In this respect, it is interesting to note that to act upon (use) *operand* resources (e.g. a personal computer), the system needs to be endowed with specific *competencies*, to be intended as essentially problem solving skills. Instead, more general level capabilities are required (which recall the three introduced above systemic conditions) to act upon other *operant* resources (i.e. other viable systems). In fact, in the case of interaction with other operant resources, a relational context emerges in which the system are reciprocally related. This means that their expectations and goals need to be harmonized to make interaction effective. However, the same process that allows a system to use operand resources generally implies an interaction with other viable systems, which possess those resources, in order to gain access to them. This aspect let us to recall the notion of *access rights*, which, developed in the research stream of Service Science, have been defined as "a constraint on service system interactions and outcomes" (Spohrer, Anderson, Pass, and Ager, 2008: 6). From a *VSA* perspective, rather than a constraint, access rights are considered to be the resource holder's *suprasystemic* power, i.e. the power of influencing the observed system's dynamics through the control of the access to the resources they require.

Another relevant aspect that emerges from this view, is that resources express their value not in themselves (objectively) but through their use (as value in use), leveraging upon the operant resource (viable system)'s knowledge endowment.

Thus, the use of resources generally implies interaction between operant resources (i.e. viable systems). Since the outcomes of this process depend on the knowledge endowment of the interacting viable systems, both the mechanisms (interaction) and the outcomes (value) of such processes can be read in terms of knowledge and cognitive (i.e. learning) processes that characterize the functioning of viable systems. In the next section, we will look more closely at interaction as a knowledge-based process.

3.3 Interaction as a knowledge-based process

So far, it has been explained that for any entity living in a social context to achieve its goals, it needs to interact with other entities in order to gain access to resources. Interaction has hence resulted to be a fundamental process for the system's viability. In fact, by interacting, the viable system accomplishes a relevant learning process that allows it to become ever more effective in its environment.

Interaction can, then, be understood as a knowledge-based process in which the cognitive capabilities of the system are relevant to produce valuable outcomes. As we shall see, this valuable outcomes represent a general expectation of the actors' participation in a process of resource integration aimed at developing synergies in the creation of value (Barile, Saviano, Polese, and Di Nauta, 2013; Barile & Saviano, 2011a; Badinelli, Saviano, and Polese, 2012).

In order to evaluate the viable systems' interaction dynamics and their outcomes, we need a model through which these knowledge dynamics can be expressed and analysed. To this aim, the *VSA*, by integrating the cognitivist and constructivist theories (Weick, 1979; Papert, 1986; Meyrowitz, 1995; Hatch, 1999), proposes an interpretation of the viable systems' knowledge processes based on their representation as *information varieties* (Barile, 2009a).

The information variety is a three-dimensional representation that expresses the viable systems' knowledge in terms of *information units*, *interpretation schemes* and *categorical values*. However, it should be noted that «these dimensions are not intended to express "proportions" of information variety as in typical spatial representations of material entities; they are not structural but "systemic" dimensions. In fact, their meaning depends on the subjective perspective of the observer and on the specific context of reference» (Barile, Saviano, Polese, and Di Nauta, 2012: 162).

The *information units* represent the "structural" composition of knowledge, which is the specification of the total amount of data held by the viable system including all that it can perceive or can further determine by processing and transforming the data into information significant to the knowledge process.

The *interpretation schemes* represent the knowledge patterns and refer to how information is organized within the viable system's whole variety. The concept is, then, that a of 'scheme' as an organizing structure of past and current experience (Pessa & Penna, 1994). It has been argued that «without such logical interpretation schemes, every piece of information would appear to us as new every time we perceive it, and consequently, we would need to create a new interpretation model to explain and understand it every time. It is through these interpretation schemes that we transform generic data into contextualized information» (Barile, Saviano, Polese, and Di Nauta, 2012: 164). The *VSA* distinguishes two kinds of interpretation schemes: *general schemes* and *schemes of synthesis*. Whereas a general scheme is compressed and potentially active, a scheme of synthesis is 'in use'; in other words, the general schemes become schemes of synthesis when they are used in a specific context, enabling a generation of new knowledge through a process of contextualization.

The *categorical values* represent the most relevant dimension of the information variety. They characterize the viable system's values and strong beliefs that over time define the system's unique personality and identity. Categorical values are responsible for accepting or refusing rational elaborations and for directing the functioning of the interpretation schemes. They are strictly connected to the emotional level of the interaction process.

Fig. 2 - Viable System's information variety

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According to the information variety model, the key factors in determining the process and outcomes of interaction between individuals or organizations as viable systems are *consonance* and *resonance*. The former qualifies a structural compatibility as a necessary (but not sufficient) condition to make the intra- and intersystem interactions possible and potentially effective, the latter qualifies both the process and the outcome of 'alignment' between the interacting varieties when emerging from conditions of consonance (Barile, Saviano, and Iandolo, 2012).

3.4 Value as the outcome of a co-creation process

Numerous definitions of value have been proposed in the last decades that have gradually converged towards a contextual, subjective and personal evaluation.

In the traditional dominant view (*value production*), value is related to the production process and it is reflected in the market sale price (*value in exchange*). Consumer is a target customer (*value destroyer*) to whom firms can promote and allocate their offerings (Barile, Saviano, and Polese, 2013).

In the currently accepted view, value cannot be standardized, replicated, imposed. It is rather subjective, time sensible, contextual, affected by personal culture and values. This subjective interpretation of value may imply a threat in case of conflicting and diverging views of actors involved in the evaluation process, but also an opportunity as it is a source of diversity (emerging variety) (Barile, Saviano, and Polese, 2013).

Several criticalities related to traditional approaches to the study of value generation processes have emerged over time. In such a context, the *VSA* proposal of a systems interpretation of the concept of value and of its creation processes, highlights the relevance of the system's capability to develop an adequate level of consonance and resonance within the whole interactional context populated by supra-systems holders of resources more or less critical for the system (Barile, Saviano, and Polese, 2013: 65). This view underlines the contextual and interactional nature of the value creation process (Ballantyne & Varey, 2006; Vargo, Maglio, and Akaka, 2008; Polese, 2009), suggesting to shift from a creation to a *co*-creation view.

From a *VSA* perspective, in particular, value can be interpreted as a measure –subjectively estimated by the different entities in the context– of the contribution that each entity can offer by participating with other entities to a common process. In this participation lies the opportunity for each of them to:

- gain access to required resources;
- achieve goals;
- remain viable.

In this sense, as we shall see in next section, the capability to co-create value is relevant for the viable systems' survival. Accordingly, the lack of this capability would affect the system's viability.

Yet, a relevant question remains open: *which laws lay behind the viable systems behaviours and are relevant for their viability?*

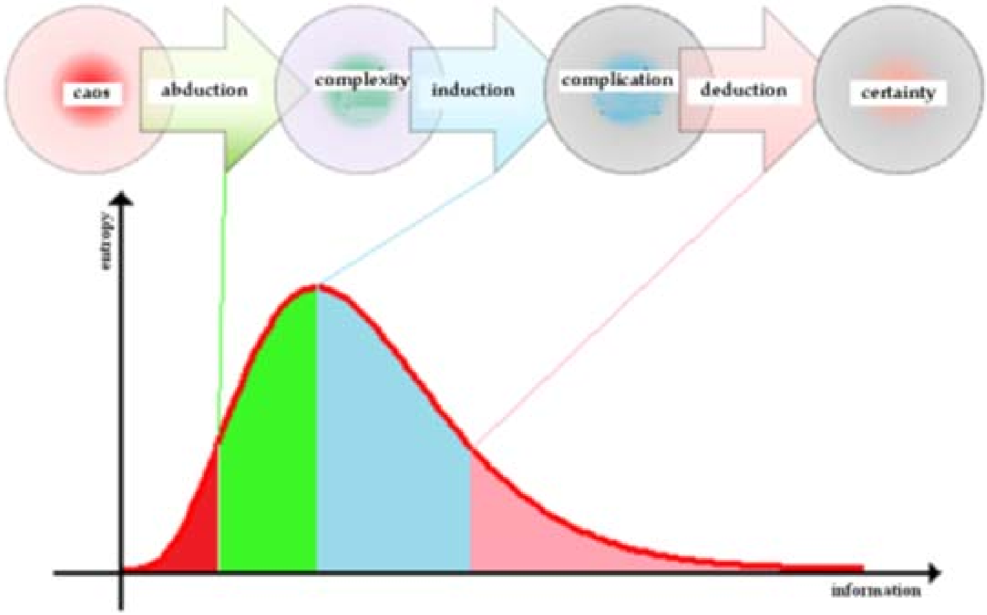
In next section, our framework is completed by the deepening of the most relevant aspect in viable systems' life interaction processes.

3.5 Syntropy as a form of organisational energy which generates viability

Up to this point, we have considered the main elements which are involved during interaction interpreted as a cognitive and learning process through which viable systems can acquire new knowledge becoming more effective in their environment.

We can graphically represent the viable systems' learning process as a curve, which brings from chaos to certainty (Barile, 2009).

Fig. 3 - The curve of knowledge



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Understanding the reason for which a curve initially tends towards entropy rising, and then progressively drops to a flat, is of fundamental importance. In an initial phase in which the decision maker faces a problem solving situation, the incoming of new information, instead of supporting comprehension, seems to make things even more complicated, giving rise to 'chaos'. Differently, when every form of incoming information is immediately pertinent and organized (understood and assimilated), we witness an effective action of 'intellective potential'.

The process is well known in everyone's daily life experiences. When we begin to be able to manage a given form of procedural know-how, the difficulties linked to practical application are gradually reduced, and we become more acquainted and confident in a given task. *Which laws or principles determine and regulate the behaviour of such a phenomenon*?

Such laws must be able to oppose the disorder caused by new data. They must be able to distinguish criteria capable of 'structuring' disposable information (Barile, 2009a). A useful reference is the Aleksandr Bogdanov's concept of selection (1922) that can have an important role in cognitive processes, based on the 'affirmative' and 'negative' notions. The reflection, meditation and solutions to problems consist of various combinations, which enter the field of thought, some of which are accepted as valid or true, while others are refused and considered as erroneous or false. According to Bogdanov, the more complex a problem is, the more important the mechanism of selection proved to be (Bogdanov, 1922).

Hence, this law must be able to make a selection amongst possible paths of solution; a selection which works on organizing knowledge and opposes the rising of entropy, guiding possessed knowledge towards a precise direction (the solution of a problem) (Barile, 2009a). This law takes into consideration information capable of contributing to the process of comprehension.

The concept which we aim towards must explain the form of the curve in Figure 3, and justify the passage from chaotic, to complex, up to certainty situations (maybe through complication), and must converge to a stable solution (a temporary condition of balance).

In science, there is a concept which refers to:

- attractive phenomena, capable of justifying spontaneous convergence towards determined conditions;
- phenomena in which the level of entropy diminishes even though the amount of energy rises;
- phenomena which distinguish a final and initial cause, as in knowledge-acquiring;
- phenomena which is indirectly induced, caused by effects which are also external to a given system.

We are referring to *syntropy*, the concept elaborated by Luigi Fantappié in 1941 and defined as the essence of every living system. Fantappié intriguingly questioned about life and what distinguishes it from 'non-life'. He maintained that there is the presence in living beings of syntropic and finalistic phenomena, typical of life itself. According to Fantappiè, cause is considered as the essence of the entropic, mechanic world, while it seems natural to consider finality the essence of the syntropic world. Thus, the essence of life lies in this principle linked to finality. In the Fantappiè's view, living, substantially, means tending towards a goal/finality. The law of life is not the one based on mechanical cause; this is the law of non-life, of death. In sum, the real law, which dominates life, is the law of finality (Fantappiè, 1944).

Strongly agreeing with this view, from a *VSA* management perspective, given that life for viable systems is essentially decision making, and that decisions demand to order the disorder, *syntropy represents a form of organisational energy which generates viability* (Barile, 2009a). The syntropic factor is the intellective potential that makes the knowledge and learning process effective. When the learning process is successfully completed, incoming information is 'reduced', thanks to the use of the interpretation schemes.

Accordingly, if life is solving problems (Popper, 1996), from a *VSA* view (Barile, 2009a), viability is the capability of solving problems and the dynamics of viable systems are essentially the dynamics of their information varieties, that is of their knowledge processes occurring through interaction with other viable entities (as well as with 'themselves' in the form of auto-processing). Therefore, focus returns on interaction, but with a further very relevant interpretative element: that of finality and the related *reverse-causality* view. Accordingly, actors' behaviours, during interaction, are directed not much by past events (causes) but by future goals. This view brings into play the system's desires, dreams, feelings; in other words, the very human side of interaction that involves psychological and emotional (thus subjective) aspects, which are connected with the systems' values and strong beliefs, i.e. the viable system's categorical values.

These aspects are relevant in the process of interaction between viable systems, particularly when a value co-creation mechanism is expected to be accomplished through the development of synergies between interacting actors.

4. Toward a value co-creation model: key factors and logics of action

Summarizing the reflections proposed so far and trying to put them together into a coherent framework, we can affirm that viability of individuals as well as organizations is the result of a capability to effectively finalize interaction with other entities.

To remain viable, systems need to have goals to achieve. In a business context, the setting of goals is a common and fundamental process. The problem is that, being still affected by a classical causality logic, objectives are defined through a forecasting process that is based on the analysis of the past and on the extrapolation of future trends.

The syntropy and reverse-causality literature gives evidence of an opposite process (Bechara, Tranel, Damasio, and Damasio, 1996; Baggott, 2003; Vannini, 2006a; Di Corpo & Vannini, 2011) which, as illustrated, is based on the assumption that they are the pursed goals (referred to future) which, in turn, direct decision making and behavior (in the present), especially in absence of alternatives that can be evaluated, like in the ever more common conditions of complexity (Barile 2009b, 2011; Barile & Saviano, 2010).

In this respect, we argue that this intriguing assumption of syntropic phenomena should be explored in the context of business management as it can significantly help to understand the laws that lay behind interaction as a value co-creation process and to direct actors' interactional strategies in multi-stakeholders relational contexts.

To this aim, having already introduced a *VSA* interpretation of the concept of value, it is useful to deepen now the concept of value co-creation by focusing on the '*co'* part of the locution (Barile, Saviano, and Polese, 2013).

From latin *cum*, 'co' is the most important concept in 'value co-creation'. It means to create together, to participate in harmony to the same process through which each actor, by pursuing goals, contributes to the creation of value. In fact, although viewing his/her own system (related to the pursued finality), by participating to a shared process, every actor can contribute to the creation of value.

Thus, the 'co' implies that the process is:

- multi-actor (several subjectivities, perspectives, expectations, etc.);
- contextual (the same actors of the network co-create differently in different contexts);
- emergent (as "co" implies a process dynamic: the system as well as the value created are emergent).

Value *co*-creation, hence, implies the engagement into the same process of several actors with different perspectives and finalities. Thus, to co-create value, actors must:

- participate (aggregation).
- be engaged (motivation).
- relate each other (structure).
- activate the process (interaction).

Several relevant questions emerge:

- How does the 'subjective' participation of each actor affect the emerging macro-process?
- Is participation both a necessary and a sufficient condition to co-create value?

- In which way value is concretely co-created through interaction?

As we assume that interaction can be represented as a knowledge-based process that leverages on the variety endowment of interacting systems that allow them to effectively act on operand and other operant resources, by applying the information variety model, we can analyze the dyadic level of interaction between viable systems viewed as information varieties.

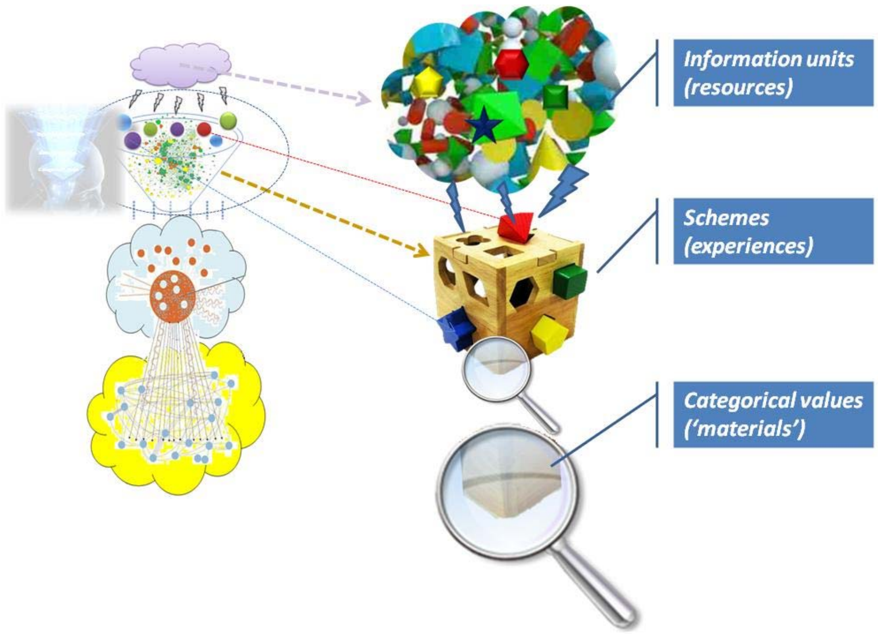
In the resulting model, the information units correspond to the representation of subjectively perceived and selected *resources*. The schemes correspond to the filtered representation of *experiences*. The categorical values correspond to what we can, metaphorically, consider as the '*materials'* the schemes are made of; that is: more or less 'elastic' and 'flexible' and consequently more or less keen on changing as a consequence of interaction with other varieties. The categorical values represent the most relevant dimension because they are finally responsible for allowing and directing interaction.

In a value co-creation context, several actors interact, characterized by their own information varieties and personal way of perceiving, selecting and processing the experienced variety. So, when viable systems interact, their information varieties interact as well. Which is the outcome of such a process?

As illustrated in Fig. 4, when a viable system perceives the complexity of reality, it first subjectively perceives its variety items through the senses and selects some of them as resources. Once selected, these variety items are filtered through a sort of 'sieve' and are processed by the system with the effect of modifying its initial variety. What is relevant to understand is that the possibility for initial variety to vary depends on the categorical values' elasticity and flexibility.

Therefore, to co-create value in a multi-actor relational context (Fig. 5), each actor's variety should *effectively* interact with other varieties. The conditions for an effective interaction are determined by *consonance* that affects the possibility for actors (whose objectives are generally different) to define an activity through which their different objectives can be achieved by participating in the same process.

Fig. 4 - The information variety's filtering action



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The dynamic of co-creation gives evidence of the synergic outcome of the individual actors' efforts that is generated thanks to interaction.

The concept of consonance highlights the potential contribution of parts to a shared process resulting in the achievement of the pursued goals through interaction: a given entity is consonant with its context of reference when other entities participating in the same context, recognize and relate with it as a member of that context. The value co-creation outcome of consonant relationships represents what *VSA* considers *resonance*.

Metaphorically, consonance, which could also be explained as the harmony of sounds (Golinelli, 2005), cannot be reduced to parts that meet, or gears that mush, which express only a structural compatibility; it rather refers to a complementarity that makes possible the emergence of a new entity from interaction. It is possible to be consonant both in good and in bad times. It is not relevant, in terms of consonance, if we are in a pleasant or unpleasant context, objectively speaking. Thus, we can affirm that the consonance between actors can be understood as the possibility of such actors (subsequently structure's components) to prelude to a new entity emergence.

Fig. 5 - Multi-actor consonance

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The possibility to activate the emergence of a new entity, which is allowed to interact becoming part of a finalized process, depends on the context. In essence, to activate a newly formed consonance is the same as to activate a second level consonance. A 'consonant' consonance, built upon new entities and context, becomes resonance. Being able to act in a multi-actor context, hence, requires to be there and to be resonant.

Having defined the information variety in terms of information units, interpretation schemes and categorical values, the consonance can be evaluated observing the variation of initial information varieties that is generated from interaction. Thus, the variation of the initial information variety is the effect of interaction, which can be used to measure the degree of consonance among interaction actors. More precisely:

- a big variation of information variety as an effect of a little interaction, denotes a high consonance;
- a low variation of information variety as an effect of a big interaction, denotes a low consonance.

At this point, we can better define it as 'second step' consonance –the *resonance*–, remembering that resonance in physics is normally defined as the convergence of forces. When there is this convergence, the synergic effect is obtained, and the process outcome is greater than the 'simple' sum of individuals' efforts.

In the same way, the efforts of two actors combined in a dynamic process, in presence of particular conditions of growing consonance, can generate resonance. Resonance, in sum, is the possibility for interaction to become more effective.

Therefore, we can affirm that the viability is strongly affected by the system's capability of effectively pursuing its goals by creating conditions of consonance in interaction with other viable entities and generating resonance. The way resonance can be achieved through syntropic processes highlights relevant managerial implications we will discuss in the following section.

5. Managerial implications

In a context of growing conditions of complexity that disorient decision makers (Barile, 2009b; Barile, Saviano, and Iandolo, 2012), a deep distrust in the future emerges, characterized by a continuous emergence of conditions in which tactical approaches of contingent problem solving are adopted, whereas a 'long thinking' (Maggioni, Barile, Calabrese, and Iandolo, 2013: 124) capable of looking at the future identifying new goals may more effectively give orientation and finalization to individuals and their organizations (Saviano & Di Nauta, 2011).

Our interpretative proposal of the life and survival conditions of viable systems, joint to the interpretative proposals made by scholars of other disciplinary domains, like physics, computer science and neurobiology, highlight the possibility that events and behaviours can be conditioned, if not directed, through "conscious volitional acts" (Maggioni, Barile, Calabrese, and Iandolo, 2013: 124), opening new scenarios to business management.

Business management has always adopted forecasting models and decision-making techniques based on future visions and objectives. If we consider, however, as mentioned, the approach adopted to define these targets, we can observe that they are generally defined by looking at past trends projected to the future through extrapolation techniques (Walker & Ainsworth, 2001; Møller, Maack, and Tan). Let us consider the example of the "as is and to be" approach to business process engineering (Burlton, 2001). This is not incorrect in itself, but these targets clearly suffer from a constraints-based logic that often, especially in contexts of complexity, might close the view of possible innovative, unexplored pathways.

Think about the common strategies that are currently adopted to approach emerging economies: they essentially follow 'linear thinking' logics being based on the adaptation of consolidated business models to the specificities of local markets (Pels, 2012). These approaches are not giving great evidence of success (Pels, Barile, Saviano, and Polese, 2013). There are, instead, significant experiences that witness the success of 'different minded' ways oriented to explore the unusual, which are capable of creatively building upon existing realities. The success cases analyzed by Pels (2012; Pels, Barile, Saviano, and Polese, 2013), in *VSA* terms, essentially give evidence of the decision maker's creative capability of extracting different contexts from the same environment that is also different systems from the same structure (Poincaré, 1948; Barile, Saviano, and Polese, 2012; Pels, Barile, Saviano, and Polese, 2013). This success cases show a strong commitment of actors in making possible future scenarios and desired outcomes even when the situation does not appear to offer great chances. In this sense, decision makers show the capability "to make possible what is currently impossible or unrealized" (Golinelli, 2011: XXXIV-6). Furthermore, management is expected to move between the practice of real and the research of the possible, so showing its nature of being an 'art' (Baccarani & Golinelli, 2004).

It appears, then, that the visioning, imaging and even dreaming capabilities of decision makers are fundamental in the achievement of goals. They allow managers to look at future with different eyes envisioning desired scenarios and being emotionally involved in their concretization. This "supercausality" hypothesis is not much a matter of precognition but mainly of an enlightened management orientation that reveals to be able to stimulate the emergence of a sort of "collective consciousness" (Maggioni, Barile, Calabrese, and Iandolo, 2013).

The point is that "the decision maker involved in choice processes, can, in conditions of high uncertainty, assume (dream) a future scenario and invest (want strongly) on its implementation, involving his leadership skills with the entire organizational structure". [In other words,] "*any action subsequent to a future, strategically envisioned scenario, is found to be strongly influenced by the expected event*" (Maggioni, Barile, Calabrese, and Iandolo, 2013: 125).

The *VSA* completely redefines the framework of reference for managers and decision makers putting focus on general level principles, which, being rooted in general system theory, can effectively guide the interpretation of the laws behind individuals and organizations behavior. At this general (or meta) level, almost universal laws and principles act giving evidence of the two fundamental forces between which decision makers generally waver. They are the two complementary and co-essential forces of *competitiveness* and *consonance* (Golinelli, 2011; Barile, Pels, Polese, and Saviano, 2012). The action of these two forces appears to us as strictly connected to the distinction between a classical and a reverse causality view. Competitiveness is common to a 'linear' thinking approach that induces decision makers to oppose a resistance to any perceived contrasting force. This approach reveals to be often unsuccessful, especially in conditions of complexity (where it is impossible to linearly relate multiple and simultaneous events), because it is based on a traditional game logic where one party wins and the other loses depending on a contractual force (Barile & Saviano, 2012).

Conversely, consonance implies 'going with the flow of the river', but not in the sense of neglecting owns aims to embrace others' ones. Consonance means feeling the context and defining goals accordingly, creating conditions of harmony with other entities (sub and suprasystems), with which, as clarified, the system needs to establish relationship for accessing the resources necessary to its functioning. Thus, through consonance, an effective value co-creation context can be obtained. Moreover, the force that can emerge from a multi-actor consonance context has the potential of a collective unitary consciousness and can concretely enable the creating of new worlds (Baccarani & Golinelli, 2004). Accordingly, the two interconnected albeit opposite forces do not define a choice alternative; rather, they should be composed through appropriate relational strategies in order to maintain the autonomous identity of each system while harmonically integrated within the whole. The key for equilibrium between the two forces, then, lies in the decision makers capabilities to see, feel, believe, think and act accordingly.

When these conditions are created, interaction generates *resonance*, which we can now redefine, in a wider perspective, as a *viable systems' life energy co-creation outcome*.

6. Future challenges and concluding remarks

As it would probably appear to the reader, we strongly believe in an open theoretical approach that goes beyond the constraints of disciplinary borders.

Based on the main assumptions of the *VSA*, the proposed conception of viability as capability to envision, pursue and achieve goals by participating in a value co-creation process, directs focus on the role of decision makers' subjective perception and experience of reality and to their capability of envisioning future scenarios. This shift of focus on the human side of interaction between viable systems, makes apparent the gap in current managers' knowledge endowment, which, being a result of the era of specialization, has generally assumed a vertical "I" shape whereas a growing need for "T-Shaped" professionals is increasingly expressed (Barile, Franco, Nota, and Saviano, 2012; Barile & Saviano, 2013).

Hence, the main challenge is approaching, requiring a courageous advance in management toward business models capable of duly taking into account the role of feelings, emotions, values, desires in decision making, especially in conditions of complexity. An effective value co-creation context can only be built by leveraging upon the actors' capability of prior creating conditions of consonance so that a sort of collective consciousness can emerge endowed with the necessary force to create new worlds creatively transforming constraints and threats into opportunities (Barile, Saviano, and Iandolo, 2012, Barile, Saviano, and Polese, 2012).

This open view, stimulated by a scientific contamination with different disciplinary domains, can set the capabilities, the power, of being able to create what is desired. This profound volition act, however, will not be sufficient if occurring in isolation. It needs a collective effort, a combining of variety carried into a network system where the contribution of every single entity can be relevant in exploring new combinations and co-creating knowledge (Savage, 1996).

This is the deep sense and the power of value co-creation as the key process of the viable systems' life in an open shared environment. This is also a stimulus to a frontier research interdisciplinary effort of scholars, researchers and practitioners that should aim at achieving 'resonant' outcome, through a knowledge *co*-creating approach.

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