



Title: *The viable decision maker for CAS survival: between change and adaptation.*

Track: *Viable Systems Approach*

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The viable decision maker for CAS survival: between change and adaptation¹

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ABSTRACT

Purpose – Purpose of this work is to investigate how organizations, intended as CAS (complex adaptive systems), today meet and react to the changing conditions of their specific contexts, in terms of change and adaptation, with particular reference to: i) the decision making processes in complex contexts; ii) the leverages that should be activated by the decision maker in order to respond to change and adaptation solicitations iii) how organizations reacts to these solicitations and implement them in their behaviors, in order to make the identified solutions more scalable.

Design/Methodology/approach – Starting from the theoretical frameworks of *vSa*, after defining the evolving concepts of change and adaptation, we will investigate how organizations translate complex decisions into behaviors, when referring to change ad adaptation. The applicability of this proposal will be verified by analyzing the transformations that occur within organizations for what concerns the definition of their procedures, organizational models, standards, routines, and how they vary/adapt according to external and internal solicitations.

Findings –The ability of organizations to adapt to external contingences and internal stimuli does not necessarily imply a loss of identity; by identifying the ‘levels’ to which change and adaptation refer, in fact, organizations learn how to interpret the surrounding environment and its complexity with the aim to understand how to change, when to change and why; this process, called of *fitting* can, then, foster their systemic viability.

Research limitations/implications – Analyze how CASs evolve, change and adapt according to external and internal solicitations.

Originality/value – The research implications will regard the possibility to verify at what stage of completion of a system the concepts of change and adaptation relate and act.

Key words *vsa*, change, service research, complex adaptive systems, decision-making

Paper type – Conceptual paper

¹ Although the article is the result of the joint work of the three authors, paragraphs 2.1, 4, and 6 are attributed to Luca Carrubbo; paragraphs 1, 2.2, and 5 are attributed to Francesca Iandolo; paragraph 3 is attributed to Valentina Pitardi.

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1. Introduction

Today everything can change. Change can occur in the offer of a product, its range, models, ways of supply, production, promotion, collaboration; or even in the logic with which to run a business, to adapt to the changing times, to technology, to the different cultures and traditions. Change can also regard functions, processes, roles, laws, purpose, structure, boundaries, relationships, vision, and framework conditions. We can change because the others change, or we can change to anticipate the changes in others (Barile et al, 2012b).

According to organizations, change may be in the structural elements that affect, for example, the processes of production and use of the offer, or those relationships that are the basis of the strategies of collaboration and allow to know the specifics of the market, or it may be in the systemic entities pertaining to the constraints of entrepreneurial action that take place in each context (Golinelli et al, 2012). Change can also have an exogenous nature and be related to the subjects or conditions that revolve around the subject observed; similarly, change can have an ‘internal’ connotation, being affected by the surrounding specific conditions; finally, change can be a combined multi-source result (Golinelli, 2002).

For what concerns organizations intended as systems, the concept of change is usually related to the need to maintain over time a state of balance, often dynamic, which can result from rational actions or from intuition, and can take into account a phenomenal reality, because those who choose to change are forced to do so according to special circumstances.

Change can also depend on being part of a larger and interrelated system, a sort of eco-system, which suggests, flues, reacts, matures expectations on action to amend the previous status for a different future, in accordance with a logic of co-evolution (Parente, Petrone, 2010); change, in fact, can be radical, temporary or permanent, can derive from a deliberate plan (Watzlawick, 1976) or it can be spontaneous.

As, usually, change is related to the availability of more information, as well as to a different perspective in investigating phenomena, being often intended, in this sense, as a cognitive redefinition of the experience, any influence of the elements of an organization (or system) contributes to the change of the system in its entirety (Watzlawick, Weakland, Fisch, 1974). Finally, change can be seen as deriving from learning processes, that generally depend on the availability of information and are strongly linked to the supplied values that belong to a specific organization and that act on the change processes by fostering or reducing them.

This paper wants to analyze how the role of the decision maker can orientate the processes of change and adaptation of complex adaptive systems (CAS), while respecting their conditions of viability and their purpose to survive. To this end, we make reference to two theoretical perspectives: CAS and *vSa*. CASs are defined *complex* as their dynamic is not explained by linear paths and few variables and *adaptive* because we want to analyze their ability to change and react to the stimuli that come from the context in which they are incorporated and operate. The specific reference to CAS is because not all the complex systems are really adaptive and the focus of this work is on change and adaptation processes. This capacity, called ‘fitness’ (Gell-Mann, 1995), allows these types of systems to survive in time and follow viable paths, namely those that guarantee their survival over time. The purpose of survival is given by making reference to *vSa* framework, according to which each system is viable as its ultimate purpose is to survive. Since this system perspective intends organizations as viable systems (VS) whose dynamics are guided by the presence of a decision maker (that can be both individual and collective), fostering the analysis of how these systems learn and evolve. In this sense, in fact, the role of the decision maker is crucial, as, by adopting a view that include the whole context in which the organization operates, it is able to orient the evolutionary paths to adaptive behaviors and solutions that preserve the viability of the system. This viability, according to *vSa*, lies in the ability of

each system to establish and develop relations and interactions of harmony with all its entity of reference, thus managing to survive.

In this work, firstly we propose the basic concepts of the theories we make reference to (CAS and *vSa*); then, we analyze the concept of change and of decision in complex adaptive contexts and with reference to *vSa*. The conceptualizations developed can be useful to explain the change and adaptation processes for CAS, according to a *vSa* perspective.

Secondly we deepened the nowadays decision making in complex contexts and the process of fitting needed to adapt organizations' structures to internal and external changes.

Finally, we propose an interpretation model that summarizes the contribution of the two perspectives to the analysis of change processes, and with particular reference to the decisions in complex contexts.

2. Literature review

2.1 CAS

There are not many works and definitions about CAS's study, but in the last decades a number of scholars and practitioners tried to give a contribution to their understanding.

Some Authors stated that CASs are everywhere, including stock markets, human bodies and organs and cells, trees, and hospitals (Begun, Zimmerman, Dooley, 2003). The basic elements of a CAS are agents, intended as semi-autonomous units able to valorize their own available resources and to evolve over time by developing model and personal behavior (Dooley, 1997). Examples of a CAS include economies, ecologies, weather, traffic, social organizations, and cultures, to name but a few (Gell-Mann, 1994). A CAS includes a dense pattern of interacting elements, operating with a local perspective and limited information and, sharing some features in common (Begun, Zimmerman, Dooley, 2003), as follow: i) the purpose of the whole emerges over time from the interacting purposes of the parts; ii) the means of assessing performance are fit with the environment; iii) the decisions are made through dialogue among parties; iv) subsystems are massively entangled and participate in each other; v) components interact as free agents; vi) interactions are generative; vii) change can be continuous or discontinuous (Zimmerman, Lindberg, Plsek, 1998).

In the last decades for some others authors there were following synthetic reflections:

- CASs are dynamic, massively entangled, emergent, and robust (Eoyang, Berkas, 1999).
- CASs may be sensitive to certain small changes in initial condition, they are characterized by their dynamic state and exhibit emergent or self-organizing behavior (Begun, Zimmerman, Dooley, 2003).
- CASs can effectively adapt to a wide range of environmental change, giving it "amazing resilience" (Marion, Bacon, 2000:76).
- Relationships in CASs are complicated and enmeshed, or "massively entangled" (Eoyang, Berkas, 1999:317).
- Three fundamental processes can be identified in CASs: variation, interaction, and selection (Axelrod, Cohen, 1999).
- CASs are characterized by an high level of connectivity, allowing the definition and evolution of a dynamic network of agents communicating and interacting constantly (Coleman, 1999; Kelly, 1994; Lissack, 1999; McKelvey, Maguire, 1999; Waldrop, 1992).
- Broadly, a service system (Spohrer et al 2007) or service world (Bryson et al 2004) is a CAS of people, and technologies working together to create value.

Many systems are complex but not all are adaptive (Dooley, 1996); «a system can be considered complex and adaptive when the system's agents have the possibility of continually adapting their actions in response to the environment and the behavior of the other agents» (Muffatto, Faldani,

2003:84). The presence of agents and the critical connections among them lead to continuous changes in CAS, as a result of the influencing external and internal forces (Begun, Zimmerman, Dooley, 2003).

The adaptation of all systems present in nature and artificial world concerns the incidence of supra-systems from which they are conditioned and influenced (Golinelli, 2005; Barile, 2008). Every day, at every moment, each of us behaves, thinks and confronts because of the experiences that has developed over time, the background knowledge, the constraints that directly or indirectly affected by the context in which we are immersed. From this point of view, the external influences have effects especially on decisions, actions, relationships and so on (Gummesson, Polese, 2009; Mele, Pels, Polese, 2010).

«CASs tend to maintain generally bounded behavior, sometimes called an “attractor” regardless of small changes in initial conditions; as a result, CASs are robust and fitting. They exhibit the ability to alter themselves in response to feedback» (Begun, Zimmerman, Dooley, 2003:257).

CASs are able not only to organize the relationship between their components, but also to favor its own reproduction with actions to influence their surroundings. The ability to change its behavior as a function of external changes allows an organization to adapt in an ever more efficient way, fueling the chances of survival in the long term and helping to make its value proposition more sustainable (Barile et al, 2013a, 2013b). The survival of a system, in fact, implies the persistence of its identity, which does not exclude change (Schein, 1990). In CAS the principle of self-learning focuses on retroactive effects of organizational processes, in order to reduce the entropy (Von Foerster, 1981) and its negative effects on efficiency; the related homeostasis in any kind of system allows to achieve and maintain equilibrium always new states within limits of its structure (Hannan, Freeman, 1977).

Studies on Tectology have dealt with processes and changes in terms of relationships with the outside; reacting to external changes can complicate internal relations, forcing a change in structure of any organizations, as push homogenisation with the outside; we refer in these cases also to the concept of dynamic equilibrium (Bogdanov, 1988).

In the past, the success or survival could depend mainly on the ability to manage the routine, now it appears to be increasingly linked to the ability to innovate and manage innovation. In this sense, we make reference to the concept of resilience, or the ability of an organization to deal with the disturbances, over time maintaining a state of evolving equilibrium (Vicari, 1991).

In reality there are no "complexes" completely isolated, since each of them is surrounded by a context, organized by other complexes, and other activities (Bogdanov, 1988). Today, being able to know and interpret the level of influences from the context, each organization can choose how to react and then adapt as defining the priorities for its actions. A system in equilibrium is able to retain its structure in a given context; organizational plasticity thus indicates the mobile and flexible character of the complex and its ability to group its entirety (Storbacka, 2011).

In a period of such strong global transformations, the rapid evolution of business organizations is conditioned by many environmental variables and the choice of supporting the development of the company by means of external relations allows for the flexibility, that becomes essential to operate in an environment characterized by uncertainty.

2.2 *vSa*

vSa is a theoretical framework for the analysis and interpretation of systems behaviors, derived from systems thinking and based on a constructivist approach.

According to *vSa*, (Golinelli, 2000; 2010; Barile, 2008; 2009) each entity (i.e. individual, community, and organization) can be described as a viable system (VS), whose ultimate purpose is to survive within its specific context of reference. Moreover, the constructivist approach considers that reality can not be intended as something objective, independent of the subject who experiences it, because it is the subject itself that creates, builds, invents what he believes that exists (Von Glasersfeld, 1984). This implies that, with specific reference to organizations, in analyzing phenomena, a central role is

played by the subject that constitutes these organizations and orientates their processes, i.e. the decision maker.

Stafford Beer (1972) firstly introduced the concept of VS as a system that survives, remains united and is integral, 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. Starting from this notion, *vSa* proposes some conceptual elements that partially differ from Beer's model. In fact, according to *vSa*, together with the analysis of the structural components, there is the analysis of the dynamics that qualify a system, always included within a context of reference that gives the system itself the possibility of learning, adapting and developing over time (principle of homeostasis: Von Bertalanffy, 1968; Beer, 1972; Barile, 2008). In fact, the ultimate purpose of survival that characterizes all the VS is reflected in the change and adaptation processes of the system's components and elements that are needed to preserve its viability. First of all, with reference to Beer's model the VS defined by *vSa* makes a strong distinction between decisions, identifying the ones related to problem solving issues and the ones related to decision making issues (Barile, 2009). The first ones are usually linked to routines and known paths of resolution, while the second ones are more linked to emergency and strategic thinking and emphasize the fundamental role of the governing body (GB) (Golinelli, 2000), that is the decision maker which is required to preserve the viability of the system within its specific context of reference.

In fact, the *vSa* identifies both a structural dimension—which is static and considers the parts and the relationships that exist among them—and a systemic dimension, that is dynamic and concerned with the identification of the interactions, while keeping into account the structural components themselves (Barile, Saviano, 2008; 2011). In this perspective, what matters is firstly the condition of the relationship and secondly that of the interactions, qualified on the basis of the concepts of consonance and resonance. Consonance and resonance represent, respectively, the potential and the consequent effects of harmonic interactions between two or more systemic entities. Consonance, then, identifies a condition of compatibility and/or complementarity between interacting entities. Resonance is related to pre-existent conditions of consonance, and is what emerges from the interaction between consonant entities. The role of *vSa* key concepts of consonance and resonance in orienting organizations behaviours is fundamental; in fact, as said, the need of preserving viability conditions for a system is strictly linked to its ability to set up and develop the relationships established with the various entities that define its context of reference. The contribution of *vSa*, therefore, underlines the importance of relation (identified by the structural compatibility defined by consonance) and interaction (identified by the systems dynamic defined by resonance), rather than connection, among actors; this shift is fundamental, also in orienting change and adaptation processes, as it calls for interaction and dynamism that overcome the only physical/monetary exchange, as it involves personal values and strong beliefs. These conceptualizations are crucial with particular reference to change and adaptation processes; in fact, understanding how complex systems react to the external solicitations by modifying their structure can be useful to analyze which are the elements that persist within new configurations and which are the ones that mutate.

For this purpose, below we analyze how the decision-making processes, starting from the conceptualization of the *vSa*, operate in conditions of change and adaptation.

3. Decision making in complex contexts

3.1 Knowledge and decision making: the information variety

In the main and in business management, the term “decision” refers to the proposal of a solution to a specific problem. This definition could be true if the environment within the organization operates was basically stable and predictable in a short term. Today, the business environment is affected by an increasing number of complex phenomena, so that the variety and variability of elements to evaluate

makes all the attempts to undertake decisions, strategies and behaviours useless. Term as “complexity”, “turbulence” and “entropy” have helped to change and redesign decision making processes removing the classical rational and predictable perspective and highlighting the need to distinguish two processes of choice: “decision making” and “problem solving” (Barile, 2009). When the features, causes and conditions of a difficulty are known and previous methodologies have been identified and tested, the choice occurs in a complicated environment and the role of the decision maker is to solve the problem. In a complex domain, because of the uncertain and variety of the elements and especially because of the “vagueness” and “ambiguity” imposed by complexity, the decision maker cannot clearly identify all the variables and understand their interactions, as well as the expected cause-effect relationships.

In fact, the decision maker has to face several problem areas requiring different resolution paths and various levels of knowledge. According to *vSa*, decision-making is affected by information and it depends on the perception of the external context and on the information variety owned by each actor, a manner of cognitive alignment between the observing and the observed systems. The dynamics of the decision-making process is intrinsically connected to the knowledge-acquiring process (Barile, 2008), represented by a determined model of abduction, induction and deduction. At first step when the decision maker faces a problem, the information flow is chaotic and not ordered; as the number of information increases, and the learning process is fulfilled, the entropy level goes down: from chaos, abduction allows to face complexity, induction to pass through complication and, finally, deduction to reach the awareness. In this process, the beliefs, convictions and interpretation schemes of the decision maker are fundamental in defining the problem itself, and in developing the dynamics that converge toward a choice. The link between decision and knowledge demands an in-depth investigation of the knowledge characteristics and concept itself.

In *vSa* perspective, knowledge is a continuous process that involves the information variety owned by a VS related to a specific time. Indeed, the interaction between different VS in order to solve a problem occurs in a particular time slot, that will be characterized by a specific configuration of information variety of all the actors.

According to *vSa*, information variety is defined by three dimensions, each one conveying specific properties (Barile, 2011). Information Units represent the structural composition of knowledge made by a collection of data perceived by senses or defined by further auto-elaborations of previous data, aimed at supporting decision processes. This dimension could be imagined as a *datawarehouse* of a VS and is strictly linked to two aspects: at first, the collection of data relies on the context wherein actors are immersed, and it will change depending on the purposes of acting; at second, the extent of a shared language will determine the level of understanding and full data captures.

The Information Units collected are organized and arranged to be able to be transformed from data to information. Interpretation Schemes represent how knowledge is shaped and allows building connections between data according to a specific purpose; they could be imagined as the *data architecture* that governs which data is collected and how it is stored and integrated. Using *vSa* language, interpretation schemes determine the transformation of blurred data into specific information depending on a particular context; they could cover different degrees of specification, from a general vast matrix capable of rationalizing information (General Interpretation Schemes) to more specific structure of interpretation, through which it is possible to filter peculiar information (Synthesis Interpretation Schemes).

In decision-making processes interpretation schemes hold an important role in achieving a possible consonance, both operational and decisional, between different VS. Indeed, stated the fractal perspective of *vSa*, therefore a community of people is a VS as well as a single person, it is possible to assume the existence of interpretation schemes to the all degrees that arise through the syntax, semantics and dictionary of shared languages. Thus, the language has the capability of building the condi-

tions of a consonance within the same community or between communities that have similar characteristics, thus becoming a strategic resource in decision-making process.

The way in which interpretation schemes are formed and used depends on Categorical Values, the value system of reference owned by a VS, strongly linked to the emotional level of the decision maker. They represent the subjective filter through which the interpretation schemes are customized and are usually shared between individuals belonging to specific social communities. Categorical values are the lens through which we look, understand and experience the world, helping to determine the degree of relevance and meaningfulness of different kind of knowledge. In this sense, categorical values are the stronger and deeper beliefs intervening in adaptation processes, responsible for the acceptance or refusal of changing.

3.2 Decision making in change and adaptation

In adopting a *vSa* perspective, “viability” is the ultimate goal of every systemic entity in a competitive context. The decision maker has the possibility to choose the adaptive solution identified as the more suitable to the specific problem, defining the level of action to be taken: from a superficial and passively adaptation to a more significant and substantial re-configuration of the company vision or of the business idea. In order to achieve this aim, the decision maker, as a strategic guide of the organization, has to monitor and analyze the evolutions of the environmental conditions to identify problem areas and, through a dynamic and continuous learning process, re-organize and adapt his knowledge to identify a solution and, finally, to decide.

Due to the interaction with the other VS, the learning and the adaptation process described above is affected by the information variety owned by every VS that participates, in an everlasting evolution and re-elaboration of knowledge configuration, both with internal and external data. In particular, interpretation schemes and categorical values are the critical determiners in these complex choices. In a VS values and beliefs guide the behavior, supporting the application of interpretation schemes in directing and organizing the collected data information. This process acts both in a single VS and between VSs interacting each other; thus, the more portions of categorical values and interpretation scheme are shared, the more converging new schemes will be created. Hence, adaptation and change require a re-shuffle of knowledge to a varying degree that will produce an evolution of the information variety (itself).

To determine the possible paths of this development, *vSa* posits two conditioning factors: consonance and resonance. Consonance refers to the potential compatibility between system elements and is more connected to the way of approaching a problem than to the amount of information. Using *vSa* language, the level of Consonance between two VSs depends on the categorical values and on the Interpretation Schemes used during a specific process. In particular, categorical values play a strategic role in Consonance variation since they address to the adoption of a specific interpretation scheme, influencing the hypothesis selection of a problem. In this respect, the level of Consonance between two systems will grow gradually if not only the deep abstract concepts (categorical values) are shared, but also their representations (interpretation scheme), and will continue to increase when more information units are added. In other words, the levels of Consonance rise due to Resonance that represents the change of Consonance during a new incoming information process.

From this point of view, when two decision makers are involved into a decision process, the stronger are mutual interests and shared values and schemes, the more there will be a chance to identify the needs and the determinants of change. Hence, *vSa* emphasizes the strategic role fulfilled by information variety of a VS in pursuing adaptive solutions and changing, and highlights the system’s ability to foster dynamic relationships based on the notion of consonance and resonance.

4. The nowadays relevance of “fitness”

4.1 The role of the Decision Maker in modern organizations

Based on the reflections arising from *vSa*, a business organization can be defined as a CAS if it can put in place actions aimed at its survival. According to this perspective, then, any system lives and its goal is to survive in a context populated by other viable systems; each context is subjectively perceived and extracted by the decision maker from the general environment in which the system is immersed, according to the logic of consonance described above.

The decision maker that, according to *vSa* is defined as the governing body (GB), is the strategic guide and coordinator of the actions taken by the organization, in order to realize its vision of the enterprise, and has the mission of continuously analyzing the evolving conditions of the specific context of reference, trying, as far as possible, to prevent negative contingencies, acting in a timely manner, or, in any case, to preparing recovery actions, where suffering the consequences of the shock occurred, when they're not provided or the event is unpredictable.

The GB, as decision maker, has the possibility to choose the adaptive solutions considered from time to time more suitable to the specific situation. It should be noted that it was crucial to identify the capacity of the agenda equilibrium conditions which, according to the specificities of the surrounding environment, possible to minimize the relief of the interventions on the operational structure (Barile et al, 2012b). In fact reason of the importance of contingency to be met, the decision maker can define the level of radical action to be taken, establishing whether adapt passively and sometimes only superficial compared to the levers strategic-productive usually used, or if you turn in a more significant and substantial its core business or completely restructure the company vision or even the business idea. The decision maker, in other words, has the task of following its own development plan, respecting the emerging contextual needs; however, it does not always require significant changes in the short and medium term, but sometimes only partial and gradual adjustments which, by focusing mainly on components operating within the structure, enables him to make the best of their ability distinctive. The adjustments are therefore characterized by the constancy of the specific structure of the organization considered, and, in essence, at the base of changes in relations between components, or rather of peripheral components, or non-strategic ones (Barile et al, 2012c; 2014; Badinelli et al, 2012).

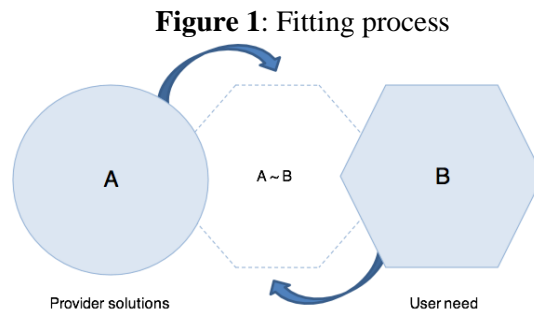
Sometimes, instead, environmental conditions stimulate changes that impact more on business characteristics, requiring actions of adjustment and changes of the operating structure to a more significant extent (transformations and/or reconstruction) (Barile, 2008; Barile et al, 2012c). More and more frequently, in fact, the adjustments are insufficient to ensure a balance between the needs and opportunities of the organization-context duo, and action is needed at a strategic level of the organization with deeper changes.

For the decision-making in CAS processes, following an interpretative logic aimed at reducing complexity, we encourage new architectures for information sharing and new infrastructures to strengthen organizations, calculation and system performance (Demirkan, Gaul, 2006; Ng et al, 2012), allowing a better management of complexity itself. The variety and variability of information, about all the possible connections within CAS, promote new forms of co-operation, interpreted as relational interactions between the actors that are cognitively aligned. At the same time, the opportunity to explore the processes of creation in a network context, as well as the structure of a dynamic system, as well as the expectations of the users, identify the “complexity of the ecosystem” (Basole, Rouse, 2008) within which everything is collected, identified and active. The system, in this regard, is made viable by the behavior assumed, thus becoming more strategic, more responsive, more adaptive, and more intelligent (Napoletano, Carrubbo, 2010). The characterization and optimization of the relations, the redesign of the organizational configurations, the management of complexity, are therefore all elements that identify a efficient CAS.

As the world is becoming smarter (we're talking often about smarter planet, Spohrer et al, 2014), in order to adapt, systems must be people-centric, information-driven, e-oriented, and mutual satisfaction and community should encourage and cultivate people to collaborate and innovate (Qiu, Fang, Shen, Yu, 2007). The VSs can be therefore defined as CAS in continuous evolution, a form of 'system of systems'. The concept of fitting can help and be really needful for CAS in order to catch its own final goal of survival.

4.2 The logic of "fitting" as leverage for business competitiveness

Fitting is an approach, an attitude, a business style, a way to foster every proposition of each organization, something useful to avoid face/deal with the difficulties of a daily adaptation. According to Systems Thinking, a number of reflections occur about the logic of change and change management; in fact, in order to survive in the long run, every organization has to plan, lead and audit a lot of operations, affecting many elements of its structure; this leads to new governance needs each time, improving the ability to react, manage and act to the external contingencies (Pels, Polese, 2010).



Source: www.asvsa.org

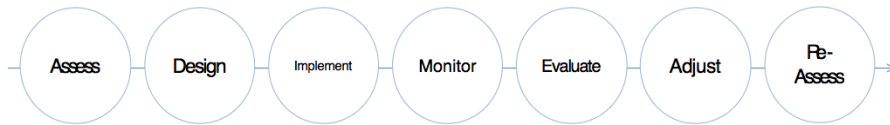
Organizations are open systems, their boundaries appear as filters from the outside and could be defined basing on the specific relationships existing in their subjectively defined specific context (Barile et al, 2012c). *vSa* helps us to understand this kind of phenomena as an interpretative lens of real economies; according to *vSa*, each organization has two different kind of structures (St), the first, defined "specific" (Sp-St), the second defined "widened" (Wi-St); both are influenced by the evolving behavior of the business system (BS). Sp-St seems to be referable to the external relations effectively activated within the entities populating the specific context of reference and concerns all the interactions with the Actors operating outside (Wieland et al, 2012). Moreover, Sp-St represents the visible expression of the BS in the modality by which it acts and pursues its final goals and has to be feasible and adaptable to the external changes and to the evolving relationships (Polese et al, 2009; Polese, Di Nauta, 2013). Wi-St, instead, deals with all the potential relations that can be effectively activated by the system in its dynamic; for this reason, any form of adaptation that involves the Wi-St is more radical and deeper.

Therefore, fitting results from two different ways of doing: on the one hand the Wi-St affects business strategies and it is related to the configuration and design of organizations; on the other hand the Sp-St concerns organizations' tactics and has to be aligned with the context in which organizations live. GB operates toward a dynamic balance among these sphere, highlighting the relevance of change. The depth of change can act at any level of the organizations' structure, and its intensity can differently affect the Sp-St and/or the Wi-St with different levels of intensity, and, consequently, with different actions required (Golinelli, 2005; Barile, 2008).

Fitting, as an adaptive set of actions, can converge on different level of BSs' structure, with different level of depth; it depends on a combination of factors, regarding the strategies of the BS (decisional area) and the constraints coming from the outside. Fitting helps to cover the distance existing

between demand and supply in a stated moment (t_0) and consists of the actions made by the Supply side to interpret and manage the needs of the Demand side, modifying something in the initial value proposition; this up-grade produces even new levels (t_0+1) in production/provision. The GB (decision maker) has to choose, reminding the effects on the St and the consequences descending, in terms of change in financial fluxes, in HR's management, in production processes, in the business policies as well. The GB usually follows an evaluation/correction process that is cyclic: i) assess; ii) design; iii) implement; iv) monitor; v) evaluate; vi) adjust.

Figure 2: Fitting flow

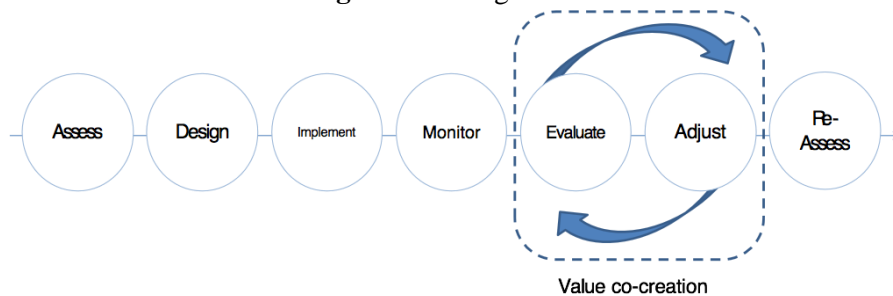


Source: www.asvsa.org

Under a systems perspective, Fitness highlights the consonance between providers and users as the possible convergence among needs and solutions; the decrease of delta raises up the synergy, fostered by the effective resonance, making sustainable offers in such a case, able to survive in the long run.

In economy there are a number of effects arising from fitness strategies and operations. The most important consequence is about the value perception by users, because the opinion of any offer proposed is influenced by the personal judgment of the adherence to personal needs; the effective perception of customers (with respect to the existing alternatives) makes the solution offered valuable, as the value is in the use (Vargo, Lusch, 2004). Further, organizations have to take into account not only which are the wants today, but also their evolution; supplies follow the changing demands in order to obtain a dynamic equilibrium. The distance between demand and supply then has to be even covered; in this sense the distance covering is the value! The possibility to understand how to “cover” that distance depends on co-creative synergies among the Actors involved (Prahalad, Ramaswamy, 2004; Ballantyne, Varey, 2006; Grönroos, 2008). The ability to preserve the value of any offer, trying to adapt to contingencies, rather than disrupt its way of thinking and acting, implies to appropriately update changing needs and perceptions through a different concept of supply, of fruition, of production, of the product offered (Barile et al, 2012a). Value co-creation in this sense implies the active contribution multi-actor (Mele, Polese, 2011), by all the protagonists of the exchange in a particular offer (up to that time only “potential”) and the concept of value certainly follows the logic of end-user’s “effective” perception and therefore subjective (Carrubbo, 2013).

Figure 3: Fitting interactions

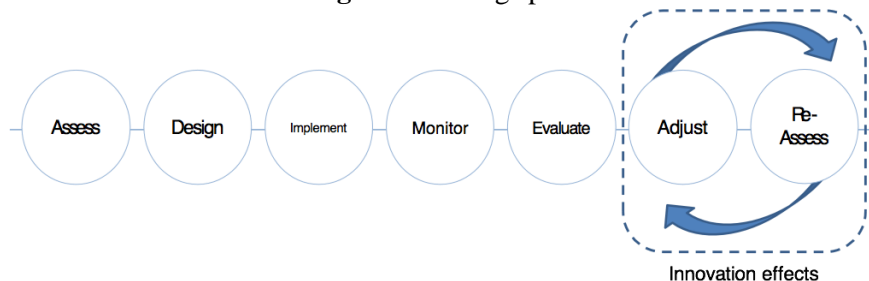


Source: www.asvsa.org

The through-put useful to match the right adjustment in order to fit with users’ needs is represented by innovation. Innovative tools are the key to up-grade products (features), management (models),

strategies and operations; in this sense, innovation is stimulated by the need of adaptation described above. Organizations develop through innovation processes, their knowledge and competences, necessary to compete, fostering the analysis of technological issues and searching correlations between continuous external changes and performances (De Santo et al, 2011), upon concepts such as intangibility, interactivity, co-existence, co-terminality and information intensity (Lay, 2002); innovation indeed may result as an experimental process during which fostering continuous learning obtainable by doing, by using, by failing, by interacting (Gronhaug, Kaufmann, 1988). Thus, if well designed and managed, innovation can enable costs reductions, quality improvements, technical performances advancements through a wise management of the innovation fonts, both internal (R&D, production, engineering, marketing proposals, etc.) and external (deriving from the relationships with universities and other public research centers, scientific journals, other businesses, exports, suppliers, service providers, etc.). This continuous learning process, in fact, appears crucial in order to achieve effective positive results from fitting and to re-orient the needs and the tasks/objectives, re-assessing and re-organizing operations and available resources, due to both internal emerging fitting constraints and to fitting exogenous opportunities, ideas. In this sense, innovation can be defined as a fitting spillover.

Figure 4: Fitting spillovers



Source: www.asvsa.org

To be more competitive, and thus be preferable to similar solutions or similar means even better than the others, updating and/or changing in value proposition are required. In this sense, since consonance (as defined before, parag. 2.2) can be understood as a synthesis of listening skills, consideration, dialogue, recognition and respect in intra- and inter-systemic relationships and the competitive ability creative, innovative, imitative (Barile, 2008), we can verify how consonance can qualify competitiveness (Golinelli, 2008:20).

Sometimes, competitiveness may depend precisely on the timeliness with which you are able to change and to properly implement the signals coming from the other actors in the process of value creation. Thus, being able to constantly adjust the offer fosters the construction of a durable competitive advantage. Therefore, today change becomes a strategic factor for competitiveness (and survival) of business organizations. An analysis of the causes and the effects of change processes constantly in place in the modern economy can be seen as an attempt to improve by modifying, by correcting, or by implementing innovating offer, functions, roles and relationships, and lead to build the foundation for the survival over time.

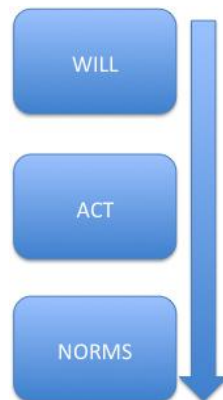
5. From decisions to behaviors

The need to analyze how organizations change and adapt according to the solicitations deriving from the external environment is fundamental for the understanding of how decisions result in behaviors. Substantially, it is necessary to analyze how value categories and general schemes, according to the ultimate goal of survival, are contextualized within the specific behaviors of the organizations. This is linked to what has been said about the change and adaptation processes that lead organizations to new configurations that are deeply linked to the strong beliefs that characterize them. In fact, start-

ing from the considerations above about decision making processes, together with the theoretical perspective of *vSa*, we propose an interpretative framework that could be useful to summarize the path that leads to the implementation of behaviors, procedures, routines within the organizations intended as CAS, with specific reference to change and adaptation processes. In what follows, in fact, we will link some general conceptualizations to the process that leads from decision to specific behaviors and that can be linked to the three dimensions of the information variety, as described in par.3. According to *vSa*, the strong beliefs represent the strongest resistance or acceleration to change, and act – positively or not - on adaptation processes; the schemes allow an understanding of these processes of adaptation and change, and the information give the decision maker greater knowledge of them. For these reasons, it is necessary to understand how deep is the change /adaptation required and on which dimensions and variables to act in order to preserve the viability of the system and grant its survival.

As every decisional process can be seen as the translation into something effective of a potentiality or of a will, that will be successively implemented through specific standards, we can make reference one of the main general schemes proposed by *vSa*, that distinguishes between will and act. In fact, act refers to realization, to completeness, and to a full definition, while the will refers to the ability to perform an action, even if it is not yet done (Barile, 2011).

Figure 5: Will. Act. Norms – from ‘abstract’ to ‘concrete’



Source: www.asvsa.org

This distinction, combined with the current requirements that are imposed on the behavior of organizations and with the governing and management decisions, draws a further distinction, perhaps more suited to the study of philosophy, that is the one between ethics and morality.

These two terms, sometimes used synonymously, are also capable, however, of a different meaning. The Cambridge Dictionary of philosophy defines ethics as “commonly used interchangeably with ‘morality’, and sometimes it is used more narrowly to mean the moral principles of a particular tradition, group or individual”. According to the second part of the sentence, we will intend that morality identify general typical behavioral patterns universally valid, while ethics define particular behavioral patterns that are usually valid within a specific context of reference.

Arguing that morality is the subject of ethics is to say that the general scheme (moral) is the object of the specific scheme (ethics); this second definition is coherent with the *vSa* perspective and that will be deepened in the following. In order to better specify what has been said, we can say that [...] ethics can be traced back to a system of universal moral rules considered in a given historical context because generally shared and, for this reason, subject to change depending on the context of reference. Therefore, the definition that can be considered valid for the purposes of this study is one that sees *morality* as the total set of principles that lead towards the basic guidelines that direct the behavior of individuals and organizations, and then, towards aims that are subjectively recognized as positive. *Ethics*, then, can be defined as the contextualization, in behavioral terms, of these moral imperatives with-

in the specific contexts that are defined by the individuals and the organizations that live them. Ethics, therefore, comes down to morality, as its declination in relation to specific historical moments and contexts.

Figure 6: Moral, Ethics, Laws – from ‘abstract’ to ‘concrete’



Source: www.asvsa.org

By making reference both to the distinction between will and act and to the one between morality and ethics we can refer to a further one that distinguishes between capabilities and competences. Capabilities, in fact, can be defined as a potential that is developable in a variety of specific contexts producing a specific competence, whereas, then, competences can be defined as a capacity applied in one or more of all the possible contexts and in it is developed. Capabilities, therefore, are the expression of a potential, where the competences are, in turn, expression of effectiveness.

Figure 7: Capabilities, Competences, Rules – from ‘abstract’ to ‘concrete’



Source: www.asvsa.org

Within the business activities, these conceptualizations can be useful with reference to the basis of the decisions and choices of the individuals (managers and, more generally, decision makers) that act in organizations and that determine the specific context of reference. The moral orientation that inspires the decision-making processes, contextualized in ethical behaviors that derive from it, can be considered as the main expression of responsibility referred to business economy.

The definition of ethics identified above, detects relatively to the concepts of function and role of business and raises the question of which of the two should be considered ethical. Since, as mentioned, the context is defined by a subject in relation to a specific purpose -which, according to the *vSa*, is survival- and ethics is, therefore, in turn defined in relation to a specific context, and is valid within it,

the rules that guide the actions of an organization should be established with reference to this specific context in which the specific organization operates.

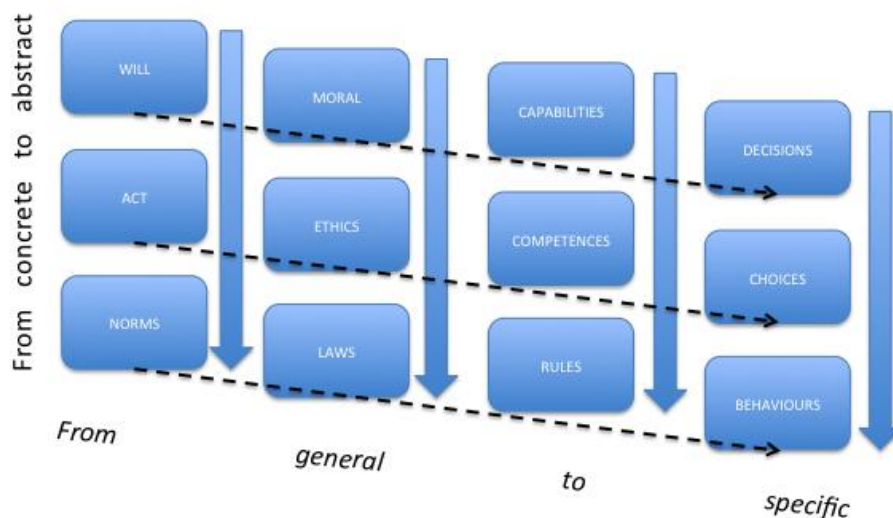
It appears useful to recall, at this point, the distinction among laws, norms, rules, and behaviors, which compose the last line of each column. Laws refer to the legislation with which the behavior of organizations and individuals are intended to be regulated and are typically gathered in a grouping of variable nature and reason, in order to orient specific conducts to certain conditions. The set of laws, and therefore the systematic organization (i.e. the “System”) of the group, forms law.

For what concerns norms, they are generally treated as “rules of conduct”, or to a command, which requires the individual to a particular behavior. Norms are not to be confused in any way with the law. In fact, while the law is a prescriptive act, norms are the result of this implementation. Norms are usually inferable from a written linguistic formulation (Constitution, regulation etc.) in order to give them a high degree of certainty and durability. The term rules means the declination, pro tempore shared, of a predetermined norm that is coded and coordinated with the others in an organic system (Barile, 2009).

From these considerations, then, it derives that the scope of the law deals with the actions of individuals and organizations, always intended within defined boundaries and systematized in a legal system; the norm, then, is the specification, in linguistic terms and using durable and generally recognized tools, of the law; the rule, finally, is the implementation, in behavioral terms, of the norm, as it emerges from procedures, models, protocols and operating techniques in common use. Substantially, within specific contexts, the rule can be understood as an application (subjectively interpreted) of the norm, giving rise to behaviors defined customs and traditions.

These conceptualizations are represented in Fig. 8 below: on the axis we reported two different conceptualizations that explain the evolution of the concepts, as the figure can be analyzed both from a horizontal and from a vertical perspective. For what concerns the vertical axis, ‘from concrete to abstract’ means that the elements go from specific to universal notions; for what concerns the horizontal axis, ‘from general to specific’ means that the elements, at each level, can influence each other. In fact, this horizontal transition shows the centrality of the process of contextualization and the relevance of the decision maker’s Information variety in terms of effectiveness and behavioral choices (both of the individuals and of the organizations).

Figure 8: An interpretative framework for the path ‘decisions to behaviors’ according to vSa general schemes



Source: www.asvsa.org

In this regard, then, we included the last column of the figure, relative to decisions, choices and behaviors. Referring to what has been said so far about *vSa*, change and adaptation, and about the relevance of the strong beliefs, we can analyze how generic decision-making processes can evolve and be contextualized in specific behaviors. Starting from decisions, which, as said, can generally relate to both complex and simple issues, we can say that they will be transformed into specific behaviors in relation to the decision maker's information variety. In fact, each decision could evolve into a series of potential possibilities, which are represented by choices, which represent the set of alternatives that the decision maker has. However, through the contextualization process, which is made by the decision maker, it will be possible to identify the specific behaviors that translate the set of possible choices in actual behavior. The transition, then, from decisions to behaviors through choices develops on the basis of the decision maker's cognitive processes. This means that, in pursuing survival, each VS can adopt different behaviours, derived from different decision-making processes, that vary according to the information variety of each decision maker.

6. Final considerations, managerial implications and future lines of research

In general, the changing context conditions characterizing the competitive arena today requires important adjustment capacities to all the socio-economic actors, that have to plan and manage appropriate adaptation strategies; in this perspective, change can be understood as an attempt to preserve their identity over time. The aim to make a value proposition sustainable over time, and therefore to be more competitive, can be achieved only if organizations are able to understand and anticipate the evolution of the surrounding contingencies, still trying to exploit their specific distinctive features, in an attempt to adequately respond to the evolving needs of the market. As emerges from the literature review, the concept of CAS did not yet reached a shared interpretative vision; in particular, systems theories and *vSa* could appear an useful key lens to a more suitable, scalable, multi-disciplinal interpretation, aligned with VS as well.

In order to compete, organizations are facing increasing complexity and, for this reason, they have to previously set decision models and they have to design their own structures in a manner suited to adaptation. So that, we assume that all modern organizations prove to be complex, but not all appear sufficiently adaptive.

From a *vSa* perspective, viability implies the system's ability to establish harmonic relations and develop interactions with all the entities operating in the same context. For this reason, the ability to adapt to the evolving conditions of the specific context of reference, or to anticipate the possible future changes, allows modern organizations to survive in the long term and to be, therefore, viable. In any modern organizations, the decision makers makes functional decisions to change at the right time, managing available resources and minding the relative gaps; the depth in change depends on personal strategy and the "plasticity" of the structure (among the others, Storbacka, 2011; Siggelkow, 2002).

The understanding of the mechanisms regulating the systems adaptation processes helps decision makers to make strategic decisions in complex environments and fitness allows surviving over time.

Future lines of Research could focus on modeling design and application on cited path, applying, stressing and forcing the concept of adaptation as a guideline for decision making; in this sense, fitness can be the through-put to preserve the conditions of viability of modern systems organizations.

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