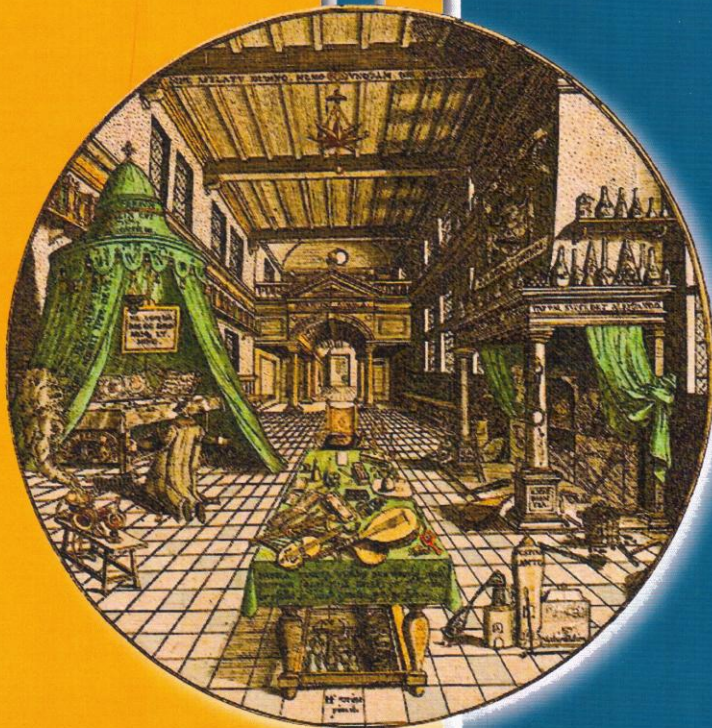


3
2011

Nuova Atlantide

Rivista di Scienze della Natura, Umane e della Complessità
Organo Ufficiale dell'Associazione World Complexity Science Academy
Organo Ufficiale di www.cyberbrain.eu
RIVISTA DELLA COLLANA EDITORIALE TEORIA DEI SISTEMI E COMPLESSITÀ

Anno XXVI – n°3 – Set/Dic 2011
Aut. Trib. Rovigo n° 7/86 del 26/09/1986
Quadrimestrale



ISSN: 2037-7304-03
ISBN: 978-88-548-4587-9

ARACNE

Nuova Atlantide

Rivista di Scienze della Natura, Umane e della Complessità
Organo Ufficiale dell'Associazione World Complexity Science Academy
Organo Ufficiale di www.cyberbrain.eu
RIVISTA DELLA COLLANA EDITORIALE TEORIA DEI SISTEMI E COMPLESSITÀ

Dir. e Red.: Via Mameli 1, 45100 Rovigo
mail: info@cyberbrain.eu_ mail: demred1@teletu.it
Anno XXVI° - n° 3 - SET/DIC 2011
Aut. Trib. Rovigo n° 7/86 del 26/09/1986
Quadrimestrale

Direttore Responsabile: Demetrio PietroErrigo
Direttore Editoriale: Maria Rita Astolfi

Consiglio di Redazione:

Chiara Trofino (CapoRedattore)

Serena Affuso
Mariarosalba Angrisani
Simone D'Alessandro
Emilia Ferone
Giulio Marini
Giovanna Porcaro Sabatini
Andrea Pitasi
Roberta Tedeschi
Roberta Vacca

marketing/pubblicità: Giulia Mancini

Editore

Aracne editrice S.r.l.
Via Raffaele Garofalo 133 /a-b
00173 Roma
06 93781065

Tipografia

ERMES. Servizi Editoriali Integrati S.r.l.
00040 Ariccia (RM), via Quarto Negroni 15

La proprietà artistica è riservata
E' vietata la riproduzione, anche parziale, con qualsiasi mezzo effettuata.
La responsabilità del contenuto dei singoli articoli è propria degli Autori.

“Nuova Atlantide”
Rivista di Scienze della Natura, Umane e della Complessità,
Rivista della collana editoriale Teoria dei Sistemi e Complessità,
Organo Ufficiale della World Complexity Science Academy (www.wcsaglobal.org)
e Organo Ufficiale del website www.cyberbrain.eu, viene fondata nel settembre del 1986.

*Fin da subito punta sulla qualità scientifica degli apporti, avvalendosi di una procedura di referaggio costituita da un pieno meccanismo di “blind peer reviewing” per il quale sono attivati i membri del Comitato Scientifico e referees esterni esperti in sistemica e scienze interdisciplinari.
Le lingue ufficiali della Rivista sono l’Italiano e l’Inglese.*

BLIND PEER REVIEWING STANDARDS

Espressione del voto in decimi per ogni criterio¹.

Titolo del volume:	
CRITERIO	VOTO
1) Originalità innovativo / riconfigurativa	
2) Potenza e ricchezza teorica e concettuale	
3) Coerenza ed eleganza teorica, metodologica, applicativa del volume nel suo complesso	
4) Coerenza ed attendibilità metodologica	
5) Potenzialità di generare spin-off teorici, applicativi e/o riconfigurativi	
6) Chiarezza e univocità terminologico- concettuale	
7) Appropriatezza, trasparenza e riproducibilità delle fonti bibliografiche	
8) Ampiezza globale e cosmopolita della fonti bibliografiche e dei modelli concettuali di riferimento.	
9) Capacità di sistematizzare saperi pluridisciplinari	
	Tot.
ULTERIORI COMMENTI E VALUTAZIONI	

L’SB della Rivista, e per essa il suo Direttore, valuterà nel seguente modo i punteggi complessivi assegnati dal referee anonimo:

Da 0 a 39: giudizio negativo

Da 40 a 49: appena sufficiente per la pubblicazione anche se con riserva.

Da 50 a 69: accettato per la pubblicazione.

Da 70 a 90: pienamente accettato, se ne consiglia la pubblicazione con tempestività.

La decisione finale relativa alla pubblicabilità del testo spetta al Direttore Responsabile della Rivista.

WCSA is a cultural association whose mission is purely scientific. It aims to conceive, plan, organize, evaluate and promote basic and applied scientific research, both on a theoretical and on a practical level. WCSA is engaged in spreading scientific research and knowledge in whatever way and form, especially in the field of interdisciplinary, systemic and complexity sciences. Thus, to make systemic science able to provide relevant scientific and intellectual contributions, e.g. from engineering to biology, from pedagogy to economics, from mathematics to sociology, from cybernetic to architecture, etc., as long as they operate through a systemic approach. WCSA is also focused on strategic problem solving concerning the fundamental evolutionary challenges that human society is currently facing in the energetic, ecologic and biotechnological domains by applying a creative and innovative pluralism at every research stage. WCSA mission involves a strong support to both Italian and foreign scholars' education in every field related to the systemic approach, also promoting the exchange and cooperation among researchers. The Academy is focused on providing a deontological code concerning research and scientific or humanistic studies.

Indice

<i>Alla ricerca dell'“Ancora”</i> (D.P. Errigo)	7
<i>Facing the world's continuous emerging interpenetrating systemic bifurcations</i> (M.R. Astolfi)	11
<i>WCSA– II° Conference Presentation</i> (M.R. Astolfi)	15
<i>WCSA– II° Conference</i> (AA. VV.)	19
<i>Articoli</i>	43
<i>La scienza come sistema sociale di comunicazione</i> (F. Paolo)	45
<i>Consulting of the XXI Century. Coping with Complex Business Systems</i> (G. Dominici)	69
<i>Tra sistema e dispositivo tra Luhmann e Foucault</i> (Una conversazione tra S. Natoli e M. Infante)	77
<i>Recensioni</i>	89
<i>The Hyperhuman world</i> (a cura di MR. Angrisani)	91
<i>Sentieri Sistemici</i> (a cura di M. R. Astolfi)	99
<i>Agenda</i>	117
<i>Modulistica</i>	123

Consulting of the XXI Century.

Coping with Complex Business Systems

Gandolfo Dominici¹

I. Complexity and the need of a new paradigm to understand the business environment.

The complexity of business environments requires new skills in terms of ability to deal with different models to depict and manipulate new “possible” scenarios in order to find solutions useful for the management of firms. Uncertainty, unpredictability, insufficient knowledge, “liquid” contexts in continuous change moved by changing actors (Bauman, 2000), are the characteristics of today’s complex system environment (Barile & Calabrese, 2011)

Asserting that the world, and consequently the business system, is complex means that it is impossible to understand it considering the single elements separately and that there is not the possibility to predict the future, but only to grasp and influence proactively the future scenarios.

A definition of complexity is given by Sherman & Shultz (1998) from the Santa Fe Institute:

«Complexity refers to the condition of the universe which is integrated and yet too rich and varied for us to understand in simple common mechanistic or linear ways. We can understand many parts of the universe in these ways, but the larger and more intricately related phenomena can only be understood by principles and patterns– not in detail. Complexity de-

¹ Tenured Assistant Professor of Business Management, Faculty of Economics, University of Palermo, Italy, e-mail: gandolfo.dominici@libero.it

Abstract

The increase of the social and economic complexity causes frequent discontinuities and the rapid change of the business environment, triggering intense transformations of the competitive logics and of the capability of forecasting using traditional models. The new competitive reality is characterized by dynamism, connectivity, non-linearity and emergent properties, in other words by "complexity". The XX century's myth of the "one best way" reveals its weaknesses and its inability to deal with the new emerging problems and opportunities, which, at the beginning of the XXI century, firms have to face. The traditional reductionist concept of "one best way", based on the "replication of standards", was a good approach to deal with complicated issues, but is not suitable today to deal with the complexity of the business system. There is no "instructions manual" to deal with complexity, there is not one "solution" to complex problems, there are strategies to deal with complexity and these strategies must involve the flexibility necessary to change and find sudden solutions to always new emerging problems. The traditional consulting skills are useless to forecast the future business scenarios; the growing complexity calls for new systemic skills able to give directions for the management of firms. The new role of consultant cannot be based, like in the past, on the mere application of models and algorithms. Consultant must think and act beyond the models and the recognized standards they have been thought in business schools; they need to develop the ability to grasp the "sense of events" instead of just classifying them into predefined patterns. Today's consultants need to think in terms of "possible"

als with the nature of emergence, innovation, learning and adaptation».

In other words we can see the business environment as a complex adaptive system that is a system formed by a set of participants interacting with each other and co-evolving, continuously, redefining their future situation. Complexity comes out when the interactions among the components of the system do not respond to identifiable schemes that can be described by an algorithm, thus resulting in outcomes that are different from original planning.

The acknowledgement of the weakness of the reductionist, analytical approach and its inability for a complete appreciation of the phenomenal reality as a whole, emerged already in the twentieth century and found its ultimate confirmation with the economical crisis of the last decade. There is the need to observe the object of study, shifting the focus from its isolated parts to the whole, thus considering relations and synergies among its elements.

In a complex environment, an actor cannot rely on a single strategy and a single method (Nicolis & Prigogine, 1989), as a consequence the appropriation of the value of change and proactive strategies require ever faster, broader and more in-depth understanding of general transformations (Luoma, 2006). This can be accomplished only adopting suitable methods to examine, to comprehend and to influence the environment through the correct management of processes. For these reasons, the use of multiple methods and multiple information sources is strongly encouraged (Kuosa, 2011).

Also the myth of the rationality of economic agents and consumers is a great limitation of the traditional conceptual paradigm of the "one best way". In today's "liquid" society (Bauman, 2000), the intangible and irrational aspects are prominent for consumers' choice. The same existence of marketing implies that the consumer doesn't choose as "*homo oeconomicus*" by considering tangible costs and benefits, but thinks and chooses according to the emotional and symbolic value of the goods. This has implication for all the value creation process, and consequently for the managerial practice.

In a famous experiment, Jensen et al. (2007) applied game theory (ultimatum game) to chimpanzees and pointed out how these primates act in a perfectly ra-

and deal with the “emergent”. The role of consultant must be proactive, in other words must not just deal with the threats of the business environment but should proactively shape the business environment by reading the signs of continuous change and moving fast to let them to become opportunities. This paper will examine the main problems and constraints of traditional consulting and propose a new role and new skills that can be more effective for the consulting of the XXI century.

tional way according to the postulates of *homo oeconomicus*. Chimpanzees are rational, human beings are not; chimpanzees would not pay a *premium price* for something they can get for few cents, while men do.

This is because, evolving, the *homo sapiens* acquired the aptitude to empathy and to abstraction, which differentiates his behavior from that of monkeys; consumers and managers are *homo sapiens* and not chimpanzees.

According to Snowden (2002): “Most humans make decisions on the basis of past or perceived future patterns, not through rational choices between alternatives, an understanding of patterns, is therefore, key to managing behavior within organizations and in relationship to markets and environmental factors”.

Moreover, the firm has not to be considered as an isolated system. Every time we use a reductionist logic to identify a system we operate a distinction between what is inside and what is outside the system. The systemic approach highlights the complexity of the relations among the system and the environment. In a systemic view the continuous interrelation and exchange of matter, energy and information between the system and the environment doesn't allow us to fix the boundaries of the system; thus there is no fixed boundary between the firm and the business environment. Every system has different and unique ways to gather information, according to its history and its context, the system creates its own semantic. The position of the firm in its business environment is the result of different levels of relations. These relations create both the internal and external hierarchies which cannot be crystallized in a single pyramid, but evolve and coevolve with mutual relations at different levels. This allows the firm to have more chances to be able to deal with emergent patterns. Emergency, in a complex system, is the manifestation of something “new and unpredictable” from the point of view of the planner.

The firm to be viable needs to be able to redefine itself continuously, changing its structure that can be conceived as “liquid” (Bauman, 2000). Therefore firm's structure doesn't need to be material; we can deem a new concept of dematerialized (liquid) structure, where firms can be considered as value constellations of intangible assets. This implies that XXI century enterprises depend much more than in the past on their

portfolio of intangible assets; the value of intangible assets is strongly dependent on communication, that consequently becomes crucial for the existence and the viability of the organization (Dominici & Pitasi, 2011). The firm is not a static entity that can be produced with predefined functions, but can be seen as a tool to plan future scenarios (Licata, 2011).

The logic from static and linear becomes fuzzy and non-linear.

The fuzzy logic derives from the pivotal work of Lotfi Zahed (1965) and has been developed in several models by the research of Bart Kosko (1993; 2000). It deals with reasoning that is approximate rather than fixed and precise. Fuzzy includes concept of partial truth, where the truth value may range between completely true and completely false. Furthermore, the fuzzy approach substitutes the notion of “belonging” of an element to a set with that of “degree of belonging”, where an element can belong or not to a set with different levels of fuzziness. This is in contrast with conventional logic theory, where binary sets have two-valued logic: true or false; fuzzy logic variables may have a “truth value” that varies in degree between 0 and 1. Fuzzy logic fits well to the concept of systemic firm’s elements belonging to different level of interaction with the environment.

The non-linearity is another of the main aspects of the actual complex business systems. Avoiding mathematical formulation we can define a non-linear system as a system where it is not possible to comprehend the inner logic of the whole system by considering the logic of its elements alone. The mathematician Stephen Smale (1966; 1967) demonstrated that structural instability increases with the number of variables in a system starting from two. This implies that regular and linear behaviors are only exceptions that happen just because of the simplification of models (Licata, 2008).

Among the two extremes of linear and non-linear, we find “*dissipative systems*”. Dissipative systems are far from the equilibrium but show a “weak non-linearity”. These systems are able to *autopoietically* (in the sense given by Maturana & Varela, 1980) organize themselves. In these systems, the exchange of matter, energy and information with the environment is balanced in a way that allows them to find a dynamic equilibrium between the inputs and the entropy of the system. In other

words, the lost energy is replaced by new energy that enables the system to keep its structure. Another characteristic of these systems is that this kind of “semi-linear and dynamic” structural equilibrium can be maintained only since the quantity parameters do not cross a specific threshold (Licata, 2008).

Therefore, firms can be considered “*dissipative viable systems*” in a complex environment. To survive and be viable they need to go beyond the cognitive ability to recognize patterns and fit them; they need to be able to grasp the sense of events and be influent in creating new patterns. This is what consulting should do in today’s complex world to help firms to succeed.

2. How can consulting deal with complexity?

As highlighted in the first paragraph, the complex and fuzzy business environment calls for new skills for the viability of firms. Consultants need to develop the skills to identify the early signs of new emerging pattern and to configure and disrupt those that are undesirable while stabilizing those useful for the firm. The role of consultants is not just to supply to the management of the firm knowledge on specific models, but to help and instruct managers to grasp the sense of events so that they can be able to create new patterns. They need to have a “multi-strategy” and “multi-level” view of the role of the firm in the business environment, so that the firm can be capable of continuously remodel its structure according to the emergencies of the liquid environment.

Consultants must help the firm to seed the knowledge and the capabilities encouraging the formation of new patterns for viability. These patterns are emergent properties of the interactions of various agents at various levels. By increasing the ability to perceive the connectivity of the systemic firm, it becomes possible to crack the existing patterns and to create the circumstances for the emergence of new useful patterns. Even if the nature of emergence is not predictable it can be influenced by behaviors that are coherent with the environment (Snowden, 2002)

To achieve this aim, it is necessary to develop a broader view of the internal context of the systemic firm

References

- BARILE S., CALABRESE M. (2011). A New Frontier in Consulting. The VSA Consulcube. *Contributions to theoretical and practical avances in management. A viable Systems Approach*. ASVSA.
- BAUMAN Z. (2000). *Liquid Modernity*. Blackwell.
- Ciampi F. (2007). Consulenza direzionale e creazione di conoscenza. *Symphonya*, 1: 63–79
- DOMINICI G. (2011). Game theory as a marketing tool: uses and limitations. *Elixir Marketing* 36: 3524–3528.
- DOMINICI G., LEVANTI G. (2011). The Complex System Theory for the Analysis of Inter-Firm Networks: A Literature Overview and Theoretic Framework. *International Business Research* 4(2): 31–37.
- DOMINICI G., PITASI A. (2011). Il Paradigm Shift della Teoria Sistemica nelle Scienze Sociali. Verso un Nuovo Concetto di Impresa Sistemico–Vitale. Proceedings of the XXII Sinergie Conference “Corporate Governance and Strategic Communication”, Milan November 10th– 11th.
- ERRIGO D. P. (2011). *Sentieri Sistemici*. Loffredo editore.
- JENSEN K., CALL J., TOMASELLO M. (2007). Chimpanzees Are Rational Maximizers in an Ultimatum Game. *Science*, 318: 107–109.
- KOSKO, B. (1993). *Fuzzy thinking: the new science of fuzzy logic*. Hyperion
- KOSKO B. (2000). *Heaven in a Chip: Fuzzy Visions of*

and of the context in which it operates. Consultants can bring conceptual tools and services that can help the management to disclose complex issues and transformation paths. To do this it is necessary to filter and choose the most valid and up-to-date information useful to establish plans and procedures which can help the management to reveal something that is not possible to grasp by the application of a single model.

We can call this ability “*intelligence of complex phenomena*” and describe it as a form of strategic intelligence, which is not limited to the mere knowledge of corporate strategies, but is a more general way of managing knowledge.

Of course this intelligence cannot be “abstract”; the company boards need to have numbers and models to justify their decisions to the shareholders. What changes from a traditional view of consulting and management is that the use of number and models is not the real basis of decisions but just the “ex post” justification of multi-strategy decisions that cannot be summarized in a single model. In other words the consultant needs to have the intuition to give the directions in the “*mare magnum*” of complexity, but must also be able to use models, simulations, narratives, semiotics, statistics, metaphors and analogies to be able to communicate complex sense-making in a simple way to boards and shareholders.

3. The evolutionary path of XXI consulting.

As stated before, the growth of complexity calls for the growth and the articulation of consulting services. While we can see the trend of a growing use of externalization of easily reproducible activities, such as material activities (production of components, assembly, etc.) and immaterial *low knowledge* activities (IT maintenance, call centers, back office activities, etc.), on the other hand, knowledge intensive activities (Research & Development, strategic planning, Human resource management, etc.) are often internalized (Ciampi, 2007). The “*intellectual in-sourcing*” creates a new kind of demand of consulting given by the need to increase the ability to plan and select the real needs of knowledge resources of the firm, according to the evolution of the

Society and Science in the Digital Age. Three Rivers Press.

- KUOSA T. (2011). Different approaches of pattern management and strategic intelligence. *Technological Forecasting & Social Change*, 78: 458–467–
- LICATA I. (2008). *La logica aperta della mente*. Codice Edizioni
- LICATA I. (2011). *Complessità. Un'introduzione semplice*. Duepunti edizioni.
- LUHMANN N. (1990). *Essays on Self Reference*. Columbia University Press.
- LUOMA M. (2006). A play in four arenas: how complexity can serve management development. *Management Learning*, 37(1): 101–123.
- MATURANA H.R., VARELA F.J. (1980). *Autopoiesis and cognition: the realization of the living*. Kluwer.
- NICOLIS G, PRIGOGINE I. (1989). *Exploring Complexity: An introduction*. Freeman and Company.
- PITASI A. (2010). *Teoria sistemica e complessità morfogenetica del capitalismo*. Aracne.
- SHERMAN, H. SHULTZ, R. (1998). *Open Boundaries: Creating Business Innovation through Complexity*. Perseus Books.
- SMALE S. (1966). Structurally stable systems are not dense, *American Journal of Mathematics*, 88: 491–496.
- SMALE S. (1967). Differentiable dynamical systems. *Bulletin of the American Mathematical Society* 73(6): 747–817.
- SNOWDEN D. (2002). *Complex acts of knowing: paradox and descriptive self-*

business system in which it operates. The “best practice” way has been for decades the cutting edge of consulting and made the fortune of the big consulting companies that were able to create highly recognizable and adopted models. Today, due to the recognition of the complexity of the business system, this concept of consulting is going to be over. This will happen for two reasons: the first is that those models are not anymore exclusive knowledge of the consulting companies, because of the *in-sourcing* of professionals coming from those companies; the second reason is that in today’s complex system environment the mere knowledge of the use of models based on “best practice” is not sufficient to provide effective strategic directions.

The big consulting companies are starting to face the limitations of the “*best practice way*”, to survive in the future they will need to rethink their offer and invest in the knowledge, the capabilities and the human capital necessary to find new strategic paths.

For these large consulting companies it could be useful to:

— *Develop networks with small local consultants or consulting companies*. In a complex scenario, where the general best practice loses its effectiveness, the small local consultant can have a better perception of the local evolutionary paths and of the dynamics of the local business system. Moreover the cultural proximity of the local consultants can be an incomparable and very effective tool to perceive the multilevel inter-relational dynamics of the systemic entities of firm with the environment.

— *Establish long term consulting relations*. While the “best practice” consulting doesn’t require long periods to instruct the management to apply a single model or set of models, the consulting for complexity needs a deep knowledge of the people and the intellectual resources of the firms and especially of their multi-level interrelations with the environment. This implies that a “*fast food*” type of consultancy is inadequate for the actual business scenario.

— *Become outsourcing provider*. The consultant must be able to know the firm better than the firm itself and to understand the kind of knowledge and resources the firm needs to acquire.

Hence the viability of consulting firms and consultants will become increasingly dependent on their abili-

awareness. *Journal of Knowledge Management*, 6(2): 100–111.

ZADEH, L. (1965). "Fuzzy sets". *Information and Control*, 8: 338–353.

ty to overcome the traditional service logics, which are based on the transfer of explicit knowledge, in order to find new ways to help firms to create the new implicit knowledge that is useful to deal with the emergencies of the complex environment.

It is important to notice that, even if the cutting edge of academy and consulting is conscious of the changes happening in the business environment in the last decades, most firms are not. It is still rare that firms and consulting companies (or even single consultants) define objectives that are not the mere application of one of more "best practice" models. Even if these models do not work, often firms' top managements attribute the scarce success of the "best practice" to a bad application of the model. This is due to the lack of "complexity culture" in the business community, which is a consequence of the prevalence of reductionist theories and models thought in management classes at universities and in business schools. To make firms more competitive we need to start from the culture of complexity and teach to the future managers and business owners the limits of reductionist "one best way" models" and the great power of systemic approach to understand and deal with the complex reality.