From the middle of the Seventies the goal of an enterprise has been identified with the value creation for the shareholders, with the underlining assumption that this would lead to the growth of its competitive ability. As a matter of fact, value creation, as it is seen by the economic-organizational doctrine, can determine the impoverishment of the company’s competitive ability. The crisis that began in 2007 is rich of examples of companies that, after years of continuous growth of both profits and value, in only few months have gone bankrupt, disappearing from the market. One of the causes is the mistaken idea of “value”. The shareholders’ management does not take into account the entropic processes linked to the company’s actions. Management therefore tends to mistake the “value creation” for the “value extraction”. This article aims at describing the negentropic role of organizational, strategic and cognitive redundancy in the processes of real value creation connected with the growth of competitiveness.

The mere fact of analyzing an organism starting from its constituents involves a loss of information on such organism.

Henri Atlan

The organism with the largest number of secondary uses is the one that will gain the most from environmental randomness and epistemic opacity.

Nicholas Nassim Taleb

Since the middle of the ’70s, with the progressive success of the agency theory, the corporate aim has been identified with the creation of value for its shareholders, with the implied assumption that this would have increased its competitive ability (Copeland et al., 2010; Stacey, 2010). But is this really true?

In his famous fable about the goose and the golden egg, Aesop tells the story of a poor farmer who one day discovers a shining golden egg in his pet goose’s nest. At first he thinks of a practical joke and considers throwing the egg away;
he then thinks about it and decides to bring the egg to an expert, to have it evaluated. Once he is certain that it really is a golden egg, the farmer can’t believe his good luck. And he is even more incredulous the following day, when he finds a second golden egg in his goose’s nest. Day after day, as soon as he wakes up, the farmer runs to the nest and finds another golden egg, so that in a short time he becomes a very wealthy man. Wealth, however, brings along greed and impatience. Unable to wait one day after the other, the farmer decides to kill his goose, so that he can take all the eggs in its belly. But, as we all know, once opened, the goose is empty, there are no eggs, as well as there is no chance that he is going to get more eggs from now on.

This fable is a perfect representation of the organizational dynamics that have been maturing in the last 30 years. The constant search for the maximization of value creation leads often to results that are not dissimilar from the Aesopian farmer’s ones. Business competitiveness, that is the ability to stay in the market in an economically profitable way in the long term, can be irremediably affected by it. The crisis that began in 2007 is crammed with examples of companies, even big-sized ones, that, after years of growing profits and value, went bankrupt in just few months, disappearing from the market. Some of them, first of all the major merchant banks, made huge mistakes in risk management, other simply could not adapt fast enough to the quick change of scenery.

In 2001 Jim Collins defined “great” a company that had been obtaining very good results for at least 15 years. According to this definition, Collins detected only 11 companies deserving this grade (Collins, 2001). It’s interesting to notice, as Burgelman and Groove did, that by 2007 8 out of the 11 “great” companies had been acquired or had under-performed compared to the market average (Burgelman & Grove, 2007).

As Richard Pascale said, “despite the huge arsenal of modern management techniques, we cannot keep successful companies healthy” (Pascale, 1991).

This situation is due to a mistake in the “value creation” concept and an incorrect assimilation of value creation as a synonym for competitive ability. As this article is going to prove, what is usually defined as “value creation” can become a process of “value extraction” with negative impact of the company’s health and competitiveness. In order to understand this concept, one has to start a reflection on the aim of the company.

Management literature always considered the aim of the company from an external point of view. For example, stating that the aim of the corporation is the generation of a profit means that one is confusing the corporation with its shareholders. Believing that the goal of the company is the generation of products and services that satisfy needs, means that one is mistaking the company for its clients. Finally, believing that the aim of the corporation is the satisfaction of the employees’ needs and expectations, means that one is confusing the corporation with the employees (Vicari, 1991). From this point of view it is not hard
to find trends of study that, each time, identified the aims of the company with the goals of one of its stakeholders: marketing focused on clients, HR experts on the employees while Finance, prevailing in the last 30 years, focused on the shareholders.

A company is, however, much more than a means to the end of a stakeholder. The etymology of the “corporation” word is “corpus”, that is a body, an organism, a biological entity (Ackoff & Allio, 2003).

In order to reduce the reductionist approach that characterizes this way of considering a corporation, it must be seen, therefore, as a cognitive subject per se. A cognitive subject whose aim cannot be external to it, as well as it cannot coincide with its existence in time. This does not mean that a company cannot be used by somebody with a specific aim, it means that this aim has nothing to do with the company’s one, whose end is its own existence achieved by maintaining its ability to create and recreate itself continuously (Vicari, 1991; Cravera, 2008).

If the aim of a corporation as a cognitive subject is survival, it can be by all means assimilated to a living system. Through the concept of autopoiesis, Humberto Maturana and Francisco Varela detected in the ability to continually reproduce themselves the main characteristic of living beings: “A living system is autopoietic because it is self-reproducing: it cannot be characterized in terms of input and output, none of its transformations can be explained as a function of the stimuli of its environment, it modifies itself on the basis of its organization, with the aim of keeping its organization itself constant” (Maturana & Varela, 1980).

Considering companies as living systems and detecting in its survival its aim has remarkable consequences on management. The most important one deals with entropic processes connected to the creation of profits. Since any economic process tends to destroy the available energy in an irreversible way (Georgescu & Roegen, 1971), the activity of a company aiming at increasing profits and value is, by itself, a destroyer of available energy, energy that is the basis of the company’s autopoietic process bent on its survival in time. As a consequence, the pursuit of mere profit and the disregard for the assets and processes connected to the preservation of the company’s autopoietic ability lead to the weakening of the potential capacity of existence of the company itself (Cravera, 2008).

The current financial methods to measure value creation lose their effectiveness, are structurally limited and can lead corporations to reduce their competitiveness.
Negentropy And Redundancy

How can value creation be rethought? But most important, how can it be linked to competitiveness? Starting from the assumption that the end of a company is the continuous self-regeneration for survival, value creation cannot be defined but the increase of its potential capabilities to exist in time. A corporation then creates value when it can reduce the entropy that leads to its decay. Entropy reduction, also known as negative entropy or negentropy, is about the continuous generation of resources that can ensure the autopoietic process of the company, and therefore its potential ability to exist, to develop and to evolve in time.

If they want to deal with complexity, corporations must aim at the accumulation of resources connected to their potential ability to stay in the market. Such resources are not only financial, but they are related, most of all, to the intangible assets of the company: its reputation and image on the market, its ability to satisfy and retain customers, the competence of its people, its know-how, its ability to innovate, and so on (Sveiby, 1997). Such assets are not directly linked to income flows, but they represent a potential that is available for the company’s future survival and evolution (Vicari, 1991).

From a managerial point of view, redundancy has always been considered a negative concept. Except for security and IT, redundancy has always been seen as a waste of resources, a pocket of inefficiency that should be eliminated as soon as possible (Taleb et al., 2009). To be able to deal with complexity and increase their competitive skills, companies should abandon quickly this wrong conviction (Hamel & Prahalad, 1994; Snowden & Stanbridge, 2004; Glassop, 2007; Hamel, 2008). Of course, we are not saying that efficiency and attention to costs are not key elements of management anymore; what we are saying is that they are not the only elements that managers must pay attention to (Davis & Meyer, 1998).

An example can make this concept clearer. Imagine for a moment a shareholder who wants to invest €1 on the stock market. One can choose between company A and company B, operating in the same industry but with different characteristics and performances. Company A has a 20% profitability rate and 70% of its people have no experience in the industry, no managerial skills and low educational level (secondary school). Company B has a lower profitability rate, let us say 15%, but 70% of its people have experience in the business, good managerial competencies and a university or post-university degree. Where would one invest one’s €1? The answer is, of course, “it depends”. It depends especially from two things. The first one is the time dimension of the investment. If one plans to get one’s money in a very short time, Company A is the right choice. The second element we should take into consideration, and a very important one, is the kind of business the companies are in. If they are competing in the industry of plastic screw caps for water bottles, even though the time dimension of the investment is medium- or long-term, the best choice is probably still Company A. On the
contrary, if the two companies are competing in a high-complexity industry, under the constant risks of technological leap and innovation-based competitive aggression, the best company to invest one's money in is probably Company B.

In this second case, as shareholder, one has chosen to give value to a redundancy. In the current context, in a company 70% of people with managerial competencies and university degrees are a cost that weighs on the balance sheets and decreases profitability. In the medium- and long-term, this characteristic becomes an asset available to the company to increase its potential of future survival and of successfully facing any change in its business.

Redundancy of intangible assets allows the company to increase its adaptation skills and therefore its competitiveness. The so-called Intellectual Capital represents a real negentropic resource, able to generate “strategic ability” (Itami, 1987), that is to enrich constantly the number of options a company has to maintain its profitability in the market in a sustainable way, notwithstanding what might happen in the competitive context (Sudarsanam et al., 2006).

If the goal of a corporation, being it a cognitive system, is to keep on generating itself, then it must draw inspiration from the evolutionary dynamics of living creatures. What’s interesting is that living beings are far from being efficient, as a matter of fact one of their main features is the redundancy of resources, such as the insensitiveness of behavior in case of possible cuts to the nervous system and the configuration of the genome (Walker & Di Nisco, 2001). Redundancy in living beings contributes to the sturdiness and the flexibility of the organism and represents therefore a necessary condition for evolution.

Stephen J. Gould describes this concept with the “exaptation” term. Gould gave this name to those structures, typical of living beings, that proved to be useful in the course of evolution but that, as a matter of fact, had previously developed for different reasons, or no reason at all, and that only later, for more or less fortuitously causes, started carrying out the functions they are still doing now (Gould & Vrba, 1982).

The intangible assets of a company should be considered from the point of view of exaptation. Many resources are not actually linked directly to income flows but, in time, they can become of the utmost importance to maintain the company’s ability to stay in the market. The real value of the intangible assets is that they are open to several possible uses, they are an available potential for the company (Cravera, 2008).

What can a company actually do, in order to increase its strategic redundancy? There are two aspects of great importance:

1. **Avoid the ROI obsession for any managerial initiative**: management is constantly looking for the ROI of every managerial initiative, regarding training, organization or strategy. In order to deal with complexity, one has to overcome this mechanistic view of management. Instead of trying to an-
swer the classic question: “What is the ROI for this initiative, activity or investment?”, the question that management should continuously asks itself is “What could happen to our competitive ability if we do not make this initiative, activity or investment? Would it be damaged by that?”.

2. **Avoid to aim at the maximization of the economic result and rethink the value creation concept**: Maximization of a single factor is incompatible with the survival of the system, in an environment characterized by growing complexity. Maximizing a company variable—being it profit or E.V.A.—leads to the inevitable destruction of other important variables, linked to the self-regenerating abilities of the company. Far from being “maximum”, the economic result a company should aim at is the one that does not affect the necessary resources for its own evolution in time. As can be seen in Figure 1, one thing is to obtain a profit of 100 affecting some intangible assets that are important for the future of the company: the customer satisfaction decreases, brand loyalty gets weaker, important competencies are lost, the image on the market is deteriorated, innovation is absent, and so on. In this case, although a profit is obtained, we have a real “value extraction”, achieved exploiting now negentropic resources useful for the future, instead of the auspicated value creation. Extraction that is going to undermine the company competitiveness. A completely different thing is the case of a company that shows a profit of 80 and keeps stable or growing those assets that are linked to its ability of evolving and adapt.

Rethinking the concept of value creation means, therefore, highlighting its generation process. We know that generating profits or creating value to the detriment of the future competitiveness is easy. The best way to avoid this dangerous practice is, as suggested by Figure 1, to measure the creation of economic value after the process of extracting value from the intangible assets has taken place. To what extent is the profit that has been created today due to a monetization of strategic assets that are of the utmost importance for future competitiveness? Finding a new way to underline the value creation/extraction processes would allow executives and companies to have a different vision of their managerial action, and would offer the stockholders a new perspective to evaluate management. This means, in fact, building a multi-dimensional performance indicator that takes into account the economic and financial metrics, as well as their correlation with the intangible assets. To know more about the building of a multi-dimensional competitiveness indicator, see *Competere nella Complessità* (Cravera, 2008).

The problem with intangible assets is that we keep on using the language of profit to provide for an interpretation and to describe the effects on the company’s performances. That’s why many methodologies were created to achieve a financial evaluation of such assets. The aim is mainly to measure how much intangibles are worth and how the economic value of a company can be esti-
This approach proves the reductionist character of business doctrine, especially as far as finance and accounting are concerned. The classic accounting approach, for example, agrees in taking into consideration for the evaluation of the company’s value only those immaterial assets that can explain the extra profit generated by the company, neglecting those intangibles that are not related to such assets (Chiacchierini, 1995).

Leaving aside the debate that can with reason be opened on the classification of intangible assets (those that can explain extra profit and the superfluous ones), this approach points out a mechanistic idea of the company, seen as the sum of isolable and isolated parts. Even though appealing words are often used to define a company as a “system”, reality shows that the organization is still seen as an assemblage of parts, functions and resources (economic and non-economic ones) whose functioning and results can be explained by analytic approaches aimed at studying the individual parts in order to understand the whole.
The Intellectual Capital of a company is the systemic and correlated body of intangible assets that ensure the process of continuous self-creation of the company itself. It is neither possible nor correct to isolate a single intangible asset from the others and from its context because the sustainability criterion of the whole system gets completely lost. The autopoietic force of the Intellectual Capital derives from the interactions and interconnections of the intangible assets of the company, it is not possible therefore to evaluate a single immaterial asset isolated from the other ones.

A practical example regards the intangible asset that most of all exemplifies the company’s extra profit: the brand. How can the value of a brand be correctly evaluated, leaving aside all other intangible assets, their inter- and retro-actions? A brand has value only if it’s solid and sustainable in time, then it does not have an ephemeral and short-term connotation. To be reasonably certain in the evaluation of a brand value, one has therefore to evaluate, investigate and measure other intangible assets related to it. Let us think, for instance, to a service company. The image of the corporation on the market can be estimated only taking into consideration other assets such as the company’s culture and values, its employees’ behaviors and competencies, the quality of the its offer as perceived by the clients and, last but not least, the brand’s real economic impact on the ability to attract new clients (Ind, 2001). If, in fact, an improvement of the reputation and image of the company has a poor impact on the attractiveness on new clients, the brand in itself is a weak value driver.

Many intangible assets, even though not directly correlated to the company’s extra profit, represent those resources that ensure the negentropic processes of the company, linked to its ability to survive in time. For instance, the transfer of a whole R&D department from one company to the other does not imply the decrease of the ability to generate extra profit in the company in the medium term. It however eliminates the potentiality for autopoiesis, that is for self-reproduction in the future thanks to the proposal of radical innovations in business. Its competitive ability is therefore affected but, when sold, it is very hard to define what is the cost of the loss. In the medium term (and in the long one as well) this cost could be zero, or even potentially turn into a profit, as the company would not have the cost of the advanced research department, that might not have produced a single innovative product in the next thousand years.

It is clear then that, in order to explain the particular contribution that intangibles provide to the company, one cannot mention the incremental profit they determine, because doing so would imply that, when estimating the benefits, the entropic processes of energy destruction would be totally neglected. The orthodox way to consider intangibles might be correct in a world where total and perfect reversibility was possible, where all resources could be reproduced unlimitedly. This world exists, of course, only in fables (and in some management book), it is not a real one.
Economic processes are irreversible. If one wants to exploit financially the value of an intangible asset, for instance, customer loyalty, one can increase prices and automatically raise the value of incremental cash flows that this asset is generating. Unfortunately, by doing so one is consuming the customer loyalty asset, extracting from it all its potential future to exploit it financially now. Right now one is increasing the profits and value of one’s intangible resource, to the detriment of the sustainability of the resource and, maybe, of the company themselves. That’s irreversibility. Should the organization decide to rebuild its customer loyalty later, it might have to invest much more resources than those produced by the previous exploitation. Besides investing so much energy in rebuilding the customer loyalty after destroying its brand loyalty with the excessive exploitation of this asset, the company could be subjected to the attacks of competitors. In that step the company lost a possible weapon it had previously owned to compete and to enhance its continuous self-creation. After such myopic decision to exploit customer loyalty financially, competitiveness and autopoietic potentialities (and therefore value) are significantly reduced.

Looking For The Cognitive Redundancy

To deal with complexity, companies not only need strategic redundancy, but cognitive redundancy as well. In a complex environment, the principle of the ecology of action is in force (Morin, 2004). Such principle tells us that every action is progressively going farther from the will of its author, a far as it enters the sphere of inter-retro actions of the environment in which it intervenes. Although being done with best intentions, the application by the management of a linear thought in search of a solution to a specific problem can determine the onset—conscious or not—of far more serious consequences. The risk of being surprised by the consequences of one’s actions grows—paradoxically—as the specialist competence of the person who must deal with a certain problem grows. More competent people have such experience on a determined subject that tend to create deep convictions and orthodoxies on what works and on what doesn’t in order to solve a specific problem. According to their competencies, they can safely state that if they do A, they can get B and if they do C they can get D. On the one hand, such approach and way of thinking are extraordinary assets and work great in relatively stable contexts characterized by low complexity. On the other hand, in complex systems, they can become a cognitive obstacle.

Of course, we are not saying that to deal with complexity one has to be incompetent. Competence and experience, of a person as well as of a company, become a potential cognitive burden only under two conditions:

1. If they also give for granted reality and the consequences of their actions on reality itself:
2. If, with respect to the different situations they have to deal with, they limit or cancel the questions they should ask themselves before making a certain decision.

A manager and a company who accept the challenge of complexity recognize completely the principle of the ecology of action and therefore lose the illusion of being able to predict the future or of giving it for granted. From a strategic and organizational point of view, they can work to increase their asset redundancy, helping to generate a resilient company that is ready to compete in any possible development of the future (Weick & Sutcliffe, 2001; Glassop, 2007; Sull, 2009). People aware of complexity keep on moving in continuous exploration, without abandoning themselves to false certainties or to habits of thought.

What does this consciousness entail? We are used to evaluate the quality of managerial decisions from the results they bring. The obvious consequence is that managers are measured according to the results they bring. Dealing consciously with complexity means questioning this consolidated practice (Ariely, 2010).

From the point of view of complexity, a managerial decision can be considered great not by its positive output (that could be due to fate or to the principle of ecology of action), rather by the extent of manager’s awareness of all the possible consequences (intentional or unintentional) that the solution might have on the company and on the competitive system. Such awareness does not guarantee a positive result—an option that, in itself, is non-existent in complexity—but minimizes the chances of being surprised by unpredicted events than can impact on the life of the organization itself.

Concretely, every time there are questions that the decision-maker never asked himself/herself before making such decision, we are in front of a scarcely aware solution, therefore a weak one as far as complexity is regarded. In other words, we are dealing with a simplistic, low-quality managerial thought.

Edgar Morin describes the methodology of complexity in the following terms:

… a method that allows the designer-observer to design the multiplicity of points of view and then to move from one point of view to the other. It must have theoretical concepts that, instead of closing and isolating entities, allows them to circulate in a productive way... (Morin, 2001)

Dealing with complexity means, therefore, that individuals and organizations should make their thought complex, open it to several points of view, search for comparison and for the different, expect the unexpected, cross the borders of their specialist know-how, ask themselves new questions, never be content with the usual answers. Increasing interconnections among data, information, experiences and observations, we increase the number of different options of the world we are building every moment of our lives. In front of whatever real-
ity, the greater the complexity of individuals and companies is, the greater the different options of actions that can be taken into consideration will be, because the cognitive process of modelization of the world will be wider and richer. An example can clarify what we mean with “making the thought complex”. In every moment all individual and all organizations find themselves in the situation described in Figure 2.

![Diagram showing three possible states: A, B, and C, with shaded areas for operational and strategic uncertainty.](image)

**Figure 2** Companies And Individuals In Front Of Complexity: Three Possible States.

In Figure 2 there are three possible states:

- Possible State A, representing reality as it is imagined by the individual or the company;
- Possible State B, representing the reality that actually happens at a specific moment \( t \), and;
- Possible State C, representing the potential reality, that is everything that could have happened in that specific situation.

Possible State A, and especially its width, depends from the complexity of our thought. The greater the number of different options of world that in every situation individuals and companies can elaborate, the smaller the gap between imagined reality A and the actual reality B will be.

On the one hand, it is possible to define the (B-A) area as “operational uncertainty”. This area depends from the level of accuracy/adequacy of constructions and interpretations of the world.

The (C-A) area can be defined, on the other hand, as “strategic uncertainty”. By definition, it cannot be reduced. The State C represents every event that can occur in that specific situation, all possible discontinuities included. It is a state of infinite and unfathomable dimension, from which complexity originates.

If people hide behind restricting mental models that create false certainties, and
companies take refuge behind rationalist approaches aimed at reducing uncertainty and searching merely for order, this gap cannot be filled, indeed the distance between the imagined State A and the actual State B can grow in time. The output is that there are individuals and companies constantly surprised by discontinuous events (Taleb, 2007). Events that sometimes are discontinuous only because of the limited modelization of the world, and that therefore could have been predicted by a thought that had absorbed complexity, so that it could create different options of the world, richer and wider.

The method of complexity does not aim at predicting the future, but at reducing the risk—that can never be eliminated—of being surprised by the events. The greater the multiplicity of points of view and the knowledge involved is (therefore the greater the complexity of thought), the greater the ability of people and organizations to deal with complexity will be.

Companies increase their potentiality to exist in time (and therefore their competitiveness) if they avoid being surprised by environmental discontinuities. This goal is achieved not by reducing their internal complexity—through an obsessive research of order, certainty and rationality—but by a gradual process of absorption of complexity, that leads to the modelization of different, richer options of world, and therefore to increase their organizational and strategic flexibility (Ashby, 1956).

**Conclusions**

Management has always been focusing on the search for efficiency. Expressions like “do more with less,” “do the right thing the first time” and so on have been characterizing management literature and efforts for more than one century. In a world of growing complexity the search for efficiency at all costs cannot be considered an uncritically positive result that should be looked for.

Efficiency is still an important and useful result in stable contexts, but it could become dangerous in more competitive and complex environments. The logic of efficiency, in fact, is consistent with the goals of profit or Shareholder Value Management perspective, but comes into conflict with the process of evolution and survival of the organization.

The complexity of the competitive environment and the recognition of the organization as a complex system as well require us to acknowledge the value of redundancy (organizational, strategic and cognitive) as the basis for the company’s perspective ability. This does not mean that efficiency has become an old management logic that should be completely abandoned. In the words of Warren Bennis, “the problem that almost all leaders will have to face in the future is to design the social architecture of their organization so that it really generates intellectual capital” (Bennis et al., 2008).
This could be pursued only through the progressive renouncement of the paradigm of value maximization and through the revision of the measurement itself of the concept of value. What is today defined as “value creation” is often a mere extraction of the value itself, realized through the monetization of assets linked to future competitiveness. In order to do that, an important step could be a different consideration of the intangible assets of a company. Most of management literature considers each intangible asset as a variable that is not linked to the other ones, and that therefore can be measured on its own. Furthermore, the evaluation of the intangible assets is usually expressed in economic terms. The paradigm shift that is suggested in this paper is twofold: on the one hand, the abandonment of the reductionist practice of evaluating each intangible asset in economic terms; on the other hand, the interpretation of the Intellectual Capital of the company as a negentropic potential force available to the company to support its own autopoietic process and its evolution in time. According to this notion, the management that is focusing on the growth of competitiveness of the company will check constantly if the process of value creation has somehow affected the Intellectual Capital of the company. Should this be the case, one has to correct the economic-financial indicator in the light of the changes to the company’s negentropic potential. Only in such case it could be possible to consider the value creation as a synonym for competitiveness and therefore for the company’s good health.

References


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