DEFINING A SPECTRUM FOR STRATEGIC THINKING

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ABSTRACT
The purpose of this paper is to analyze the nature of strategic thinking and to construct a spectrum for it made of monochromatic thinking models. I design a framework defined by four basic dimensions which come from the nature of the future. These dimensions are: time, complexity, uncertainty, and innovation. For each dimension I define three basic monochromatic thinking models and specify for each of them the main feature. Then, I analyze each model capability of describing events and phenomena from the future and decide if it fits or not into the spectrum of strategic thinking. The main idea of this paper is based on the metaphor of the property of white light to be decomposed by a prism into a spectrum of monochromatic colors. That means that strategic thinking is a rather complex mental phenomenon that can be decomposed into a spectrum of simple monochromatic thinking models. All of these thinking models co-exist in our mind more or less, but only some of them are fitted for being a part of the strategic thinking spectrum.

KEYWORDS: *creative thinking, entropic thinking, nonlinear thinking, probabilistic thinking, strategic thinking*

JEL CLASSIFICATION: *D8, L1, M1*

1. INTRODUCTION

It is a fact that complexity of the real world is almost infinite in time, space and its structure. In the same time, the power of our brain to process all the data and information coming from this world is finite. Thus, we live with the paradox of understanding an infinite world by using a finite power of our brain. The exit of this paradox is to construct approximate models of the real world and to work with them. We create *thinking models* (Bratianu, 2007; Bratianu & Murakawa, 2004; Ohmae, 1982), or *mental models* (Gharajedaghi, 2006; Johnson-Laird, 1983; Senge, 1990; Sherwood, 2002). Senge (1990, p. 8) considers that "*Mental models are deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action.*" Since in the literature the expression *strategic thinking* has got a quite large acceptance, I shall use in this paper the expression *thinking models*. These models have been developed in time through education in family, community, schools, and university. They represent a functional interface between inner world of knowledge and external world. They are fundamental in making decisions (Gladwell, 2005; Kahneman, 2011). Since they are approximate solutions of the infinite complexity of reality, our understanding depends on their construction and functionality. The more adequate they represent the reality we are leaving in the better decisions we can make. Thus, it is important to develop powerful thinking models, which are able to avoid large cognitive errors. But, who tells us how good such a thinking model is? We can answer to this question if we analyze the structure of the thinking model and how it works with respect to other models. There is

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no absolute answer, but relatively we can say that model A is better than model B, for a given context and with respect to a certain metric.

The context we are interested in is the business environment where managers should be able to make best decisions in order to be successful. The business environment became in the last decades turbulent and almost unpredictable. "*Today's organizations face a 24/7 world that is fast-paced, complex, and uncertain. Competition can be intense around the clock throughout the world. Competitive advantage can disappear overnight. Even the smallest companies can enter global markets easily, relying on Web-based transactions and unique products and services*" (Greiner & Cummings, 2009, p. 1). In such a dynamic business environment, the classical management with its hierarchical structures and organizational linear processes becomes inefficient. As Kotter (2012, p. 46) remarks, "*The solution is a second operating system, devoted to the design and implementation of strategy, that uses agile, networklike structure and a very different set of processes. The new operating system continually assesses the business, the industry, and the organization, and reacts with greater agility, speed, and creativity than existing one.*" Strategic thinking and the strategy process become of paramount importance. They should be able to find imaginative responses "*to what is NOT known, to the surprising, unexpected, incomplete, or illogical nature of what arises through our practice*" (Spender, 2014, p. 21). In the new knowledge economy, strategic thinking should depart from the paradigm of strategic planning and adopt a complete new structure (Mintzberg, 2000; Mintzberg et al., 1998; Rumelt, 2012). Defining *a spectrum* for strategic thinking is important not only for practitioners but also for academics involved in the business education. Since strategic thinking is a rather complex process it is necessary to understand it very well in order to contribute through the university education to its development (Dixit & Nalebuff, 1993; Mintzberg, 2004).

The structure of this paper is as follows: In the next section I shall present the research methodology. Then, I shall discuss the meaning of the strategic thinking spectrum. After setting this theoretical framework I shall present systematically the monochromatic models which can be integrated into it. The analysis is done considering the following main dimensions: time, complexity, uncertainty, and innovation. In the final part I shall put together all the components of the strategic thinking spectrum, and draw some conclusions.

2. RESEARCH METHODOLOGY

The purpose of this paper is to look into the structure of strategic thinking, to analyze a series of monochromantic thinking models and to construct a *strategic thinking spectrum*. Thus, the paper consists of a theoretical research based on the principles of metaphorical thinking (Andriessen, 2008; Andriessen, 2011; Lakoff & Johnson, 1980; Lakkof & Johnson, 1999) and grounded theory (Charmaz, 2006; Remenyi, 2014). According to the metaphorical analysis framework I considered in the source domain the semantic field of the concept of *white light spectrum*, and in the target domain I considered the concept of *strategic thinking spectrum*. Based on this analysis I concluded that strategic thinking spectrum is a *construct* that should comprise several monochromatic thinking models that I have to define. To achieve this goal I used the principles of grounded theory, formulated by Remenyi (2014, pp.161-162) as follows:

"*1.The research focuses on theory development.*
2.There is a dataist attitude toward the field work and its understanding.
3.The literature review is conducted with care to minimize any preconceptions.
4.The principle of theoretical sampling is applied."

The research work followed a theoretical development focusing on the abduction method and mental representation of the strategic thinking spectrum. The dataist attitude came as a normal approach as a consequence of the building interactively the structure of the axial coding (time, complexity, uncertainty, and innovation). For the initial coding framework I used the following

categories: inertial thinking (INT), dynamic thinking (DYT), entropic thinking (ENT), linear thinking (LIT), nonlinear thinking (NLT), systemic thinking (SYT), deterministic thinking (DET), probabilistic thinking (PRT), chaotic thinking (CHT), template thinking (TET), intelligent thinking (INT), and creative thinking (CRT). In order to keep up with the economy of space for this paper and the clarity of presentation I am not going to enter the details of this dynamic process of semantic coding and constructing the monochromatic thinking models. I shall present only the result of the first coding and then the results of the axial coding which defines the framework of the strategic thinking spectrum. I consider that presenting the content of my analysis is much more important than the details of the methodological work, details that can be found in the grounded theory works (Charmaz, 2006; Remenyi, 2014). The third requirement is easily demonstrated since I used literature review not for some known ideas confirmation but for the new concepts argumentation. Thus, I am in the line with the basic philosophy of the grounded theory. The last principle it has been used when I selected the monochromatic thinking models.

3. THE MEANING OF THE STRATEGIC THINKING SPECTRUM

Metaphorically speaking (Lakoff & Johnson, 1980; Lakoff & Johnson, 1999), we may consider *strategic thinking* as *white light*. In 1660 the famous Isaac Newton performed a series of experiments with the light in order to understand its nature. When he focused a beam of white light upon a triangular prism, the white light decomposed into a spectrum of monochromatic colors. The visible spectrum is bounded by the red color with a wavelength of 610-700 nm and the violet color with the wavelength of 400-430 nm. We recall that 1 mm = 1 000 000 nm. The visible spectrum is a continuum of electromagnetic radiation representing a series of monochromatic colors bounded by red and violet.

Based on this metaphor we may consider that strategic thinking is *a spectrum* of monochromatic thinking models, defined within a theoretical framework based on four basic dimensions: time, complexity, uncertainty, and innovation. The time dimension is important since strategic thinking is about the future not about the present context, and any necessary change for strategies implementation needs time. While operational management deals with the day-to-day decisions, strategic management deals with future possible business of the company (Carpenter & Sanders, 2008; Johnson et al., 2008; Warren, 2008). Managerial practice has demonstrated so far that future comes always with more complex problems that we face today, especially due to their incomplete information and associated unknowns. Future does not exist except in our minds. Even so, it is not an extrapolation of the present situation; it is an aggregation of probable events which brings in uncertainty. Many new problems cannot be solved using known methods. For new problems we need always a degree of novelty, and thus innovation can be considered the fourth fundamental dimension of the strategic thinking framework. I call these simple models monochromatic since they are defined according to a single most evident characteristic similar to a certain wavelength. The monochromatic models I define considering that they are related to strategic thinking spectrum as a result of axial coding procedure (Remenyi, 2014) are the following:
- Time dimension: *inertial thinking, dynamic thinking, and entropic thinking*.
- Complexity dimension: *linear thinking, nonlinear thinking, and systems thinking*.
- Uncertainty dimension: *deterministic thinking, probabilistic thinking, and chaotic thinking*.
- Innovation dimension: *template thinking, intelligent thinking, and creative thinking*.

All of these models may play a certain role in our thinking process, but only the most powerful models can be part of the strategic thinking spectrum. The practical problem managers face in making decisions is which monochromatic model is dominant since it will influence significantly the decision making process. For instance, inertial thinking is a very simple model that does not

contain *time* as a variable. For that fact, inertial thinking is not able to accommodate change and as a result it will oppose change. If in a practical situation a manager has a dominant inertial thinking, the final decision will be to resist change instead of implementing it. I shall present each of these monochromatic models showing their most important features and how they fit or not to the process of strategic thinking.

4. TIME DIMENSION

4.1. Inertial thinking

This is the simplest thinking model. In this model time does not exist at all, and events have the tendency of maintaining their *status quo* due to the inertia force. Inertial thinking is a timeless thinking monochromatic model. Although it is such a simple model, we need it due to its unchanging existence which gives us psychological comfort and the feeling of security. Just think how comfortable you feel when going home after a busy day and find everything in its own place and status. Nothing changed regardless of the elapsed time since you left for your job. Think about mountains. They don't move and they don't change in time. They have a timeless existence. Not so for organizations. Any organizational structure has the tendency of maintaining its form and any manager prefer to keep the same success formula in solving operational problems. That means to keep everything within the comfort zone. Inertial thinking cannot accommodate change, since change can be performed only in time and inertial thinking does not contain time as a functional variable. As a result, inertial thinking will oppose change of any kind. There is no possible change in an inertial or static environment (Burnes, 2009; Kotter, 1996; Senior & Swailes, 2010). People having a dominant inertial thinking will oppose change in a normal way. This could be one of the main explanations why this transition period in the Romanian economy and society takes so much time. People resist changes due to a dominant inertial thinking, and social structures resist change since people are afraid of unknowns. Strategic thinking leads to strategy formulation and then to their implementation. However, implementing strategies means change and development for the whole organization, and managers having a dominant inertial thinking will oppose them. Thus, inertial thinking cannot be a part of the strategic thinking spectrum. It is a useful thinking model but only for routines and repeating procedures, like in industrial environment. A good example could be a classical assembly line for motorcycle or some other mechanical equipment with a well-defined structure.

4.2. Dynamic thinking

This is a more elaborate model since it includes time as a functional variable. Thus, dynamic thinking allows us to understand events and phenomena which develop in time. That means that dynamic thinking can accommodate change and represents much better reality than inertial thinking. We learn dynamic thinking in schools at physics as a result of the Newton's laws. I have to emphasize that *time* in dynamic thinking appears only with its quantitative dimension, that means physical time measured with hours, minutes, and seconds. For instance, in the well-known mathematical formulation $V = S / T$, time is introduced in this metric. There is no past, present or future in that formulation since Newtonian physics is based on *reversible* processes. I recall the fact that a reversible process has got the property of returning back to the starting point, going through the same equilibrium states. People usually forget that assumption which is crucial in understanding dynamic thinking. Since in a reversible process we can come back to the initial state it means that in our journey there is no future or past. There is a continuous present. That is a strong limitation for understanding real processes, especially social processes which are not reversible, like in physics. Social and organizational processes are irreversible processes. For irreversible processes dynamic thinking is not adequate since introduces large errors. Unfortunately, dynamic thinking is so well-developed in schools that many managers hardly can get over its limitations. Due to its limitation

introduced by the assumption of reversible processes, dynamic thinking cannot be a part of strategic thinking. It is a better model than the inertial thinking since it accepts change, but it cannot make the difference between past, present and future which means it cannot develop a vision for the future (Bratianu & Murakawa, 2004).

4.3. Entropic thinking

The entropic thinking model constitutes an advanced dynamic thinking model since it is based on real processes that are irreversible. The key concept used to describe this model is *entropy*, a concept introduced first in thermodynamics by Rudolf Clausius and then extended in many other fields of science and engineering (Ben-Naim, 2012; Georgescu-Roegen, 1999; Handscombe & Patterson, 2004). Entropy is a measure of irreversibility, and all natural and social processes are irreversible. For instance we as human beings grow and get older, and we can never reverse our life into childhood. In this situation time *means* more than just intervals elapsed between different moments or stages of some considered processes. Time has got now two dimensions: a *quantitative* dimension represented by measuring duration in seconds, minutes, or hours, and a *qualitative* dimension represented by its orientation. Time has direction, from *past* toward *present* and from *present* toward *future*. We may say that real processes have orientation or direction in time. Future and past are not interchangeable like in the dynamic thinking model; they represent distinct periods of time in a life cycle. Also, there is a time orientation:

Past >>> Present >>> Future

This orientation comes from irreversibility of processes, from the real impossibility of coming back any time to the starting point. Scientists say that entropy introduces a *time arrow*. Thus, entropic thinking allows us to think about the future of organization and the future of business. Future does not exist in this physical world except in our minds. People who are able to think about the future and to construct possible developments there of their business are visionary people. Leaders distinguish themselves from managers by this capacity of thinking for the future. However, not everybody can have a vision about their own business. For instance, it is well-known the fact that Howard Schultz after his return from Italy suggested to the owners of Starbucks to open coffee shops like in Italy, but they saw no future in such a business due to the different culture in Italy by comparison to America (Schultz, 1997). Strategic thinking is about the future and leaders visions (Johnson et al., 2008; Kotter, 2012). Thus, entropic thinking constitutes a monochromatic thinking model which fits very well into the spectrum of strategic thinking. We just cannot conceive strategic thinking without the capacity of envision the future given by entropic thinking.

5. COMPLEXITY DIMENSION

5.1. Linear thinking

Linear thinking is the simplest thinking model along the complexity dimension. It is the crudest approximation of the complexity. It is like in geometry when a curve is approximated by a linear segment. Due to its simplicity and easiness in understanding the complex world, linear thinking is a dominant monochromatic thinking model. The fundamental characteristic of this model is the linear correlation between inputs and outputs of a given process. That means that for any linear process the output is proportional with the input. The key word here is proportionality. Some authors consider that linear thinking is identical to rational thinking, and nonlinear thinking is associated to emotions and feelings (Groves et al., 2008; Vance et al., 2007). I cannot agree with this extension of linear thinking because even rational way of thinking can be nonlinear. That is why I emphasize proportionality as the main feature of linear thinking. For instance, if somebody is paid with $10 per hour for a job and he works 40 hours a week, the money he receives by the end of that week will be computed as follows: 10 (dollars/hour) x 40 (hours/week) = 400 (dollars/week). That is a very simple computation and a predictable process, characteristics that transformed linear thinking into a

universal way of thinking. Linear thinking is based on the properties of the mathematical linear spaces (Bratianu, 2009; Bratianu & Vasilache, 2010). Proportionality is only one of them. Linear processes assume that their component activities are flowing in sequences. That means that each sequence starts only when the previous activity is ended. There is no overlapping of them. Also, it is assumed that we can deal with superposition of activities or problems. According to the superposition rule in management there is a well-known practice that says that any complex problems can be decomposed into several simple problems and solved. Then, by aggregating all solutions from the simple problems we can get the solution of the complex problem. That is true only when the initial problem is linear or very close to a linear one. Otherwise, this practice may lead to erroneous solutions. Linear thinking is so extended in our daily life since many of us consider it the only way of thinking. Measurement systems are based on linear thinking. For instance, measuring temperature is based on the property of dilation of some physical bodies. Due to temperature a copper bar is increasing its length proportionally with the increase of temperature, and its initial length. Also, the physical time we measure with a watch is linear. Its linearity is used in turn in measuring many other activities, as I mentioned already with the hourly salary. The Romanian Diplomas students receive from universities are linear since they are based on an educational program composed of a linear structure of activities which are evaluated with linear systems. That means that in a Romanian university a student cannot obtain his diploma earlier than the defined time if he studies in an intensive way. Linear thinking represents a real psychological barrier in understanding creative and intellectual processes, as well as emotional knowledge and intelligences. Future is a complex field of possible events and processes and it cannot be understood in terms of linearity. That is why linear thinking cannot be a part of the strategic thinking spectrum.

5.2. Nonlinear thinking

Nonlinear thinking is based on any correlation between inputs and outputs of a process, excepting the linear one I presented above. Thus, the correlation can be represented by a polynomial, a logarithm, an exponential and so on. Nonlinear thinking is a more complicated process but it is more adequate for complex realities like intellectual mental processes (Bratianu, 2011; Bratianu, 2015; Gardner, 2006; Gladwell, 2005; Goleman, 1995; Kahneman, 2011). Motivation for performance and innovation constitute just two important managerial decision making processes where nonlinear thinking can lead to realistic solutions. For instance, when a manager would like to give a bonus to his workers and he decides to give the same amount of money to each worker regardless his or her performance, the motivation is destroyed. Also, if he decides to give bonuses proportional to the salaries or the number of years worked for that company would have averse effects. The metaphor for nonlinear thinking is the *butterfly effect*: a butterfly is agitating its wings in New York and soon a typhoon will start in Tokyo. That means that a small input can generate a large out puts. Gladwell (2010, p. 9) explains the nonlinear thinking in terms of epidemics: "*These three characteristics – one, contagiousness; two, the fact that little causes can have big effects; and three, that change happens not gradually but at one dramatic moment – are the same three principles that define how measles moves through a grade-school classroom or the flu attacks every winter.*" By comparison with the linear Diplomas given by the European universities due to their time framework, the U.S. universities give nonlinear Diplomas which are based on a different metric: credit hours. Thus, a university measures the success of any student based on how many credit hours and what grades he receives during a study time period. For instance, having an intensive study program a student in a master program defined for two years can graduate that program in only one year if all requirements are met. This explains the phenomena that youngsters can enter a university program at any age, based on their performances. To be a student at the age of 15 years it is not anymore an exceptional case in American universities. That means a legislation system based on a nonlinear thinking. In management, nonlinear problems cannot be decomposed into several simpler problems and solved sequentially since that approach changes the nature of the

problem. Peter Senge (1990, p. 67) explains that issue using a beautiful metaphor: "*Incidentally, sometimes people go ahead and divide an elephant in half anyway. You don't have two small elephants then: you have a mess. By a mess, I mean a complicated problem where there is no leverage to be found because the leverage lies in interactions that cannot be seen from looking only at the piece you are holding.*" Nonlinear thinking can be a part of strategic thinking spectrum.

5.3. Systems thinking
This is the most advanced monochromatic thinking model along the complexity axis. The main difference between this model and the previous ones is that we consider processes composed of many activities that interact continuously, having many inputs and many outputs. Thus, it is rather difficult to express everything in terms of only one correlation between input and output. Most of the activities are nonlinear and some of them may have conflicting behavior. "*Living systems have integrity. Their character depends on the whole. The same is true for organizations; to understand the most challenging managerial issues requires seeing the whole system that generates the issue*" (Senge, 1990, p. 66). That means to apply systems thinking. Usually, such way of thinking is taught in engineering schools since any engine is a system and the only way to understand its functionality and exploitation means to use systems thinking. Unfortunately, in the Romanian business schools we don't teach students system theories and we do not apply systems thinking in solving practical managerial problems. The main explanation comes from the fact that most economic theories students learn are based on linearity.
"*Business and other human endeavors are also systems. They, too, are bound by invisible fabrics of interrelated actions, which often take years to fully play out their effects on each other. Since we are part of that lacework ourselves, it's doubly hard to see the whole pattern of change. Instead, we tend to focus on snapshots of isolated parts of the system, and wonder why our deepest problems never seem to get solved*" (Senge, 1990, p. 7). Systems thinking makes use of both rational and intuitive thinking, and this property makes it suitable for constructing a vision for the future. Systems thinking is a part of the strategic thinking spectrum.

6. UNCERTAINTY DIMENSION

6.1 .Deterministic thinking
Deterministic thinking is based on idea that things and events must be *well-defined* and *determined* before they happen. In nature, events and phenomena happen in concordance with some fundamental laws we studied in schools and universities. In social life and in business events happen as we want due to planning them in concordance with some criteria. For instance, in nature due to gravity field physical objects will always fall toward the ground surface. It is a determined fact. Also, heat will always be transferred from the body with a higher temperature toward the body with a lower temperature. We are sure about that phenomenon due to the second law of thermodynamics. In social life we construct time tables for buses, trains, and airplanes and want them to respect them. Also, we go to lectures based on a timetable. A timetable is a human construct based on a deterministic thinking. The main characteristic of deterministic thinking is that it operates with certain events, i.e. events that have probability equal to zero or one. When its probability equals to zero the event will not happen for sure. When its probability equals to one the event will happen for sure. In both situations uncertainty is zero. Since there is no uncertainty for producing such events, there are no risks associated to them. Human mind prefer to work with deterministic events since it is averse to risk taking. Our school education is based heavily on deterministic thinking and that is why managers face real difficulty when making decisions in uncertain situations. In order to reduce uncertainty in social life institutions generates rules and regulations, and at national and international levels legislation. Deterministic thinking is valuable in social and managerial control since it yields predictable results. However, future is not known. That

means that future contains events which are not deterministic. Since strategic thinking is focused on future and future is full of uncertainty, it cannot have in its spectrum deterministic thinking.

6.2. Probabilistic thinking

Probabilistic thinking is based on the fact that uncertainty is the rule and not the exception. In nature, society and life events do not have certain outcomes. Events occurrence has a probabilistic nature and they may happen with some probabilities (Taleb, 2004; Taleb, 2007; Makridakis et al., 2009). One of the most known models of probabilistic thinking is the weather forecast. We learn from TV programs, newspapers or from our smartphone about the weather but we don't know for sure that the forecast is going to be 100% accurate. To understand and make decisions in conditions of uncertainty we must think probabilistic, which means to evaluate the probabilities of events and to judge the whole situation considering them and the risks associated to them (Hastie & Dawes, 2001; Knight, 2014; Lindley, 2006). The difficulty comes from our education that is based on deterministic thinking and from the adversity of our mind to work with probable events, especially when they are highly improbable (Kahneman, 2011; Taleb, 2007). To describe the highly improbable events Taleb (2007) introduces the concept of *Black Swan* as being characterized by rarity, extreme impact, and retrospective predictability. In this perspective, "*Black Swan logic makes what you don't know far more relevant than what you do know. Consider that many Black Swans can be caused and exacerbated by their being unexpected*" (Taleb, p. xix). Due to its capacity to deal with probable events, the probabilistic thinking fits very well into the spectrum of strategic thinking.

6.3. Chaotic thinking

An advanced model for understanding the deepest nature of natural and social phenomena is the chaotic thinking. It is based on chaos theories, which have in common the integration of deterministic and probabilistic logics in a quite new and hard to describe manner (Bird, 2003; Gleick, 2008; Stacey, 2001). Basically, chaos means to create order in disorder through interactive processes that have a sensitive dependence on initial conditions. According to Gleick (2008, p. 23), "*In science as in life, it is well known that a chain of events can have a point of crisis that could magnify small changes. But chaos meant that such points were everywhere. They were pervasive. In systems like the weather, sensitive dependence on initial conditions was an inescapable consequence of the way small scales intertwined with large.*" Future is totally unknown but it depends on present, which means that it is sensitive to initial conditions. Understanding the interactive phenomena that can generate chaos one can be better prepared for creating good strategies for the future. Thus, chaotic thinking is a part of the strategic thinking spectrum.

7. INNOVATION DIMENSION

7.1. Template thinking

Template thinking is the simplest way of solving problems on this dimension. It is based on well-established structures or templates one must follow. For instance, writing this paper is done using the template worked out by the conference organizers. This template has two functions: to make my work easier, and to assure a certain degree of uniformity for all the papers. Like inertial thinking that does not contain time, template thinking does not contain innovation. The innovation comes with the template, but once the template is established everything is clear. Such a thinking model is very useful in performing managerial routines but is not capable of coping with future events. Thus, template thinking cannot be a part of the strategic thinking spectrum.

7.2. Intelligent thinking

Intelligent thinking reflects the processing capability of a decision maker in choosing the best solution for a given operational context. Intelligent thinking operates with known explicit and tacit knowledge. There is no new knowledge creation. Intelligent thinking is based on the multiple intelligence concept developed by Gardner (2006), and on the new findings of the cognitive sciences. Intelligent thinking is very flexible. It searches for many alternatives of the emergent problem and for many possible combinations of all known data, information and knowledge such that from all these combinations to produce the best answer. Intelligent thinking is necessary for creating strategies since it allows us to optimize solutions. Thus, intelligent thinking is a part of the strategic thinking spectrum.

7.3. Creative thinking

Creative thinking implies production of new knowledge useful for new products and services (Nonaka & Takeuchi, 1995; Nonaka et al., 2008). New knowledge is important when managers are confronted with new problems for which old solutions cannot be used. Innovation is the main output of creative thinking. According to Christensen (2003), innovation can be done incrementally or in a disruptive manner. Incremental innovation is favored by a culture which is averse to risk, while disruptive innovation is stimulated by a risk taking culture. Creative thinking generates novelty and is essential for solving new problems, creating new products, new services, or new markets (De Bono, 1994; Tidd et al., 2001). Companies like Apple, Microsoft, Google, 3M, Facebook, Alibaba and others became successful for stimulating creative thinking and implementing creative strategies. Creative thinking must be a part of the strategic thinking spectrum. For instance, for more than a century, innovation has been the hallmark of 3M's growth, reflecting a culture of shared ideas and technology: *"Throughout history, many great thinkers have embraced the maxim that the best way to predict the future is to create it. In this regard, 3M's business model is to foster organic growth by inventing new products that previously did not exist"* (www.3M.com).

8. CONCLUSIONS

The purpose of this paper is to construct a spectrum for strategic thinking, based on the metaphorical thinking and the principles of grounded theory. Using the metaphor of *white light* and its decomposition in a spectrum of monochromatic colors, I defined a framework with four main dimensions able to characterize strategic thinking: time, complexity, uncertainty, and innovation. These dimensions came out of the axial coding process specific for the grounded theory. For each dimension I define three monochromatic thinking models based on their most characteristic feature. Thus, on time dimension I define: inertial thinking (INT), dynamic thinking (DYT), and entropic thinking (ENT). On complexity dimension I define: linear thinking (LIT), nonlinear thinking (NLT), and systems thinking (SYT). On uncertainty dimension I define: deterministic thinking (DET), probabilistic thinking (PRT), and chaotic thinking (CHT). On innovation dimension I define: template thinking (TET), intelligent thinking (INT), and creative thinking (CRT). Not all of these models are part of the strategic thinking spectrum. Judging upon the entropic nature of the future, its complexity, uncertainty and capability of generating new events and phenomena I consider that the strategic thinking spectrum is composed of the following monochromatic thinking models: entropic thinking, nonlinear thinking, systems thinking, probabilistic thinking, chaotic thinking, intelligent thinking, and creative thinking.

Although the goal of this research is a conceptual construct – strategic thinking spectrum – it has a great importance in the practice of management and decision making since it allows from the very beginning choosing the right monochromatic thinking models in conceiving, elaborating and implementing strategies in organizations. For instance, any temptation of using linear thinking is a

clear misunderstanding of strategizing since the future is not a linear extrapolation of the present time. Unfortunately, that is a frequent mistake in designing strategies and strategic plans. In the same way, using deterministic thinking like in operational management is a prove of not understanding the uncertainty nature of the future, and of forcing Newtonian logic in processes that are not based on deterministic events and phenomena. Understanding the spectrum of strategic thinking and how each monochromatic model may contribute to the decision making in turbulent business environment constitutes the main contribution of this paper to the practice of strategic management in organizations.

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