

The Influence of Design Reasoning towards Business Strategising and Innovation

André Liem

*Norwegian University of Science and Technology, Department of Product Design
Andre.liem@ntnu.no*

Abstract

The objective of this article is to reflect six models of “Design” reasoning against the four generic perspectives of business strategising. The selection of these six models was based upon their relevance for design practice. The models are: Problem Solving, Hermeneutic, Reflective Practice, Participative, Social and Normative.

Through heuristic comparisons of Business Management and Design Thinking literature, similarities can be found among “Business Strategising”, “Design Strategising” and “Designing Thinking”. Furthermore, it can be concluded that from an “Innovation mode of thinking”, typical models of design thinking and reasoning show similarities with the four strategic perspectives as illustrated in Whittington’s matrix.

The relationship between strategy perspectives and models of design reasoning can form a reference for business managers, design managers and designers on how to plurastically develop innovation strategies. In this context the term “plurastic” should be interpreted from a more nuanced perspective, considering short-, and long term, as well as “egoistic” and “altruistic” ambitions of the organisation.

Finally this article aims to argue for connectivity among “Business Strategies”, “Philosophical Worldviews” and “Models of Design Reasoning” through narrative methods, such as story telling.

Keywords: *Innovation, Generic Strategies, Models of Design Reasoning, Narratives*

Introduction

The changing global environment is compelling organisations and businesses to permanently seek the most efficient models to maximise their innovation management efforts through new methods and paradigms, which efficiently serve existing and new markets with new and/or modified products as well as services [1, 2].

Within the context of integrated product development, the level of innovative success in formulating an effective product strategy and a design goal is highly dependent on how thorough “Product Planning and Goal Finding” processes were carried out in the front-end of Innovation (FEI). Utterback and Abernathy claimed that processes and relative focus of innovation changes as the firm matures, underscoring its fluid nature with respect to the firm and the environment in which it operates [3]. This fluidity is underscored by Crawford [4], who discussed three levels of innovation: pioneering adaptation, and imitation.

Likewise, Veryzer [5] discussed innovation from the perspective of “technological capability” and “product capability” dimensions. In this context, innovation involves advanced dynamic capabilities that do not exist in current products and cannot be achieved through the extension of existing technology. This “dynamic capabilities” approach allows the firm to create new products and processes, and respond to changing market circumstances as a subset of

competence/capabilities [6]. Processes, facilitating dynamic capabilities, combine different kinds of specialized knowledge, which constitutes the essence of products innovation and which is represented by knowledge creation and absorption, knowledge integration and knowledge reconfiguration [7].

However, strategic and industrial designers with an engineering background usually adopt a classical strategic planning and problem solving approach towards product idea generation, goal finding and industrial designing. This classical, pre-planned and profit oriented approach is seen as too prescriptive, and if perceived from a “strategy as practice” lens, it can be criticized as being superficial, extending in only marginal ways mainstream positivist views of strategy [8].

In response, Whittington’s [9] development of the *praxis*, *practice* and *practitioners* framework complements positivistic world views, as did the work of others who linked strategy as practice to different strands of practice theory [10].

The rhetoric explains that businesses exist for a variety of reasons; some exist as profit-making concerns while some are non-profit making or not-for-profit concerns. The Whittington matrix encapsulates the various theories of action on what processes and outcomes firms do pursue, in order to achieve competitive advantage. These are the classical, evolutionary, processual and systemic perspectives on strategy [11]

In terms of extrapolations towards design practice, models of design reasoning can also be “outcomes” and “processes”.

Generic Approaches to Strategy

The four theories of action in business strategy offer an insight into the motivation behind a company’s vision and what strategies they most likely implement. Whittington’s aim [11] in creating these four perspectives was to provide the reader with fundamentally different ways of thinking about strategy in a wide range of situations from the challenges of leadership and change, to innovation and internationalisation. The author of this article revisits these theories as they show similarities with a selection of philosophical worldviews and models for design reasoning [12].

The Classical Approach to Strategy

According to Whittington [11], for classicists profitability is the highest goal of business and rational planning as the means to attain it. This was based on Sloan’s viewpoint [13] on business strategising, which was driven by profit making. The former President of General Motors, who laid out the cornerstone for this Classical strategy, was convinced that the strategic aim of a business is to earn a return on capital, and if in any particular case the return in the long run is not satisfactory, the deficiency should be corrected or the activity abandoned. This quote has led to the establishment of the key features of the classical approach: the attachment to rational analysis, the separation of conception from execution and the commitment to profit maximisation [1, 13].

Evolutionary Approach on Strategy

Evolutionary approaches do not rely on top management’s skill to plan and act rationally. Competition is not overcome by detached calculation such as in classical perspective but by constant struggle for survival of the fittest. The biological principle of natural selection is at the core of this evolutionary theory. Whatever methods the managers adopt, markets will determine profit maximization and the best performers will be the ones that survive. Rational methods are not the basis for this approach because it is ‘evolution that is nature’s cost-benefit analysis’ [14]

Processual Approach to Strategy

Supporters of processual approaches believe that rational economic man is not possible because we cannot overlook all factors at the same time [15]. Human nature is simply flawed. Therefore, processual approaches neither subscribe to rational strategy-making forwarded by the Classical approach, nor do they agree with the evolutionary perspective. Abandoning the profit-maximizing outcomes of the market, the best processual method is not to strive for the ideal but to work with what the reality offers.

Micro-political views imply that firms are not united towards a single goal such as profit. Instead it is made up of a number of individuals with different interests, acting in an environment of confusion and mess. The members of the organization bargain between themselves to arrive at a set of goals that is acceptable to them all.

Systemic Approach on Strategy

Systemic theorists believe that the organization is capable of planning and acting effectively. However, to them economic activity cannot be separated from social systems. These densely interwoven social systems influence the means and ends of a systemic approach and define what a suitable behaviour is for their members.

In a systemic approach, the organization is not just made up of individuals acting purely in economic transactions, but of individuals embedded in a network of social relations that may involve their family, state, their professional and educational background, even their religion and ethnicity [11]

Philosophical worldviews for design reasoning

With respect to various perspectives on innovation and design thinking, philosophical references and epistemological worldviews were often introduced as a foundation for the discussion of various models of “Design” reasoning and practice. As explained by Creswell [16] a worldview can be defined as “a basic set of beliefs that guide action” and is similar to paradigms or epistemologies. The types of philosophical beliefs held by individual designers will often have great impact on their approaches of design theories and indirectly on the concrete methods and techniques they use. Four different worldviews: positivism, constructivism, pragmatism and advocacy, will be presented and position in *Figure 1*.

It should be noted that the presented worldviews may take various forms and may make use of principles that are comparable from the one to the other. They are not considered as rigid and separate but rather may overlap on each other to varying degrees. Pragmatism for example makes use of elements from both post-positivism and constructivism but remains a worldview on its own.

Positivism and Post-Positivism

Positivism, also referred to as “scientific method” or “empirical method” is associated to modernism and briefly put claims that there exists an objective reality independent from the observer. Unlike positivism, post-positivism offers a vision that is more nuanced and better suited for study of design science; it recognizes that we cannot be absolutely positive about the truth of knowledge when studying humans [17].

It is a deterministic philosophy that enforces the scientific need to structurally assess and identify causes that influence outcomes. Hereby, ideas are reduced into a discrete set of “sub-ideas” to test, based on careful observation and measurement of the objective reality. However, post-positivism recognizes that knowledge is conjectural - absolute truth can never be found. This means that evidence established in research is always imperfect instead of proving a hypothesis.

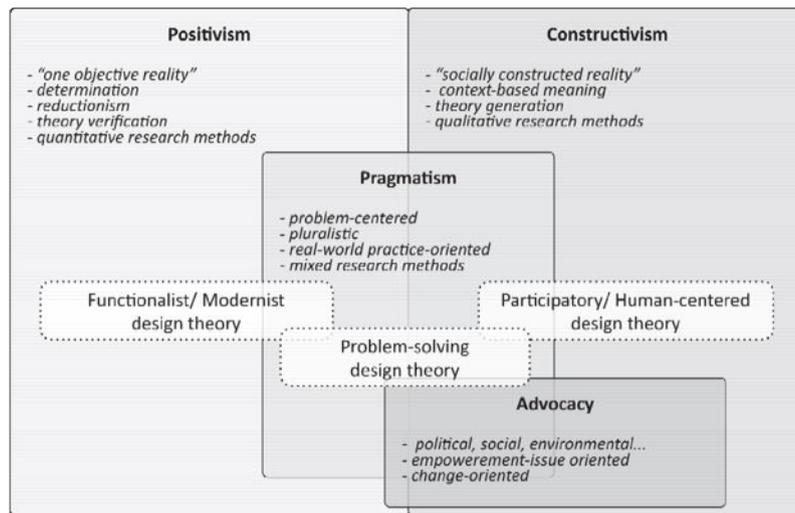


Figure 1 Overview of presented worldviews and design theories.

Constructivism

Constructivism, also referred to as “social constructivism (*in terms of learning through interaction in groups*)” or “social construction of reality (*concerning the created artefact as a result from group interaction*)”, is affiliated to postmodernism (rejection of absolute truth) and defers radically from post-positivism by acknowledging that we are constrained by our own perception and as such cannot access reality and that what we consider to be reality is constructed. In other words the observer and the observed cannot be separated; reality is co-constructed by individuals in a social context [18]. Beliefs change over time as the realities they describe; as such researchers seek to capture the complexity of views instead of narrowing them to a few categories of ideas. Subjective meanings of experiences are varied and multiple, as well as socially and historically influenced; constructivist research focuses on the contexts and interactions among individuals.

Pragmatism

This worldview, as summarized by Cherryholmes [19] seeks to clarify meanings based on situations, actions and their consequences rather than antecedent phenomena as in post-positivism. It puts great importance on focusing on a problem and then using pluralistic approaches to derive knowledge about the problem. However stands are not taken on the debate of reality as objective or subjective.

The pragmatic worldview assumes that an ideology or proposition is true and may be used as long as it works purposeful. However, their choice should be justified, based on how its propositional meaning connects to the practical consequences of accepting it. Therefore, the truth of an idea needs to be tested to prove its validity within a given set of contexts, whether they are social, historical, economical, and political.

Advocacy

This worldview arose as a reaction to the imposed structural laws and theories of post-positivism [16]. It claims that these do not fit the needs of marginalized individuals who face issues of social justice. It is related to constructivism in the embracement of human-centred considerations but criticizes the fact that constructivism does not go far enough in advocating for marginalized people. Therefore specific issues need to be addressed such as empowerment, inequality, oppression, domination, etc. Individuals need to be included in the research and design process in order not to be further marginalized.

Models of design reasoning

With respect to various attitudes towards innovating and perspectives on strategising epistemological worldviews were introduced in the previous paragraph as a foundation for the discussion on various models of “Design” reasoning. In this section six models of “Design” reasoning as exemplified by Lie [12] will be elaborated and reflected upon their relevance for design practice.

- ***Problem-solving Model.*** Often is credited to Simon [20], this model represents a systematic and deterministic approach to the design process inspired by engineering, the natural sciences, and the rise of the computer sciences in the mid-1900s. Through a mechanistic world-view, the design process is partitioned into smaller sub-processes or sub-problems, which then can be solved through problem-solving methods.
- ***Hermeneutic Model.*** Has a natural affinity with vision-models from the management literature. It encourages an analytical and iterative approach to contextual interpretation, taking into account nested levels of contexts until the manager or researcher decided that saturation has been reached [21]. In design theory, this model has been proposed on several occasions [22, 23]. The central challenge of design work is to gain an understanding of the designed product; its contexts, its values, and its functions. At the outset of a design process the potential solutions and the choices that designers face are practically infinite. The designer must reduce this variety by establishing a directed understanding that reduce the variety and provide some guidance. This model implicitly posits the designer’s personal experience and subjectivity of the design process as a central element.
- ***Reflective Practice Model.*** The constructionist reflection-in-action theory, proposed by Schön [24], is perceived as a reaction to the rational problem-solving philosophy. As design problems are unique and difficult to generalise, it focuses on the designers’ or developers’ actions and efforts, with respect to reflective and conjectural conversations with the situation to reinterpret and improve the problem as a whole. Methods applied by the designer are to be based on acquired knowledge, experience and reasoning.
- ***Participatory Model.*** Designers act as facilitators to mend the gap between their own perception and understanding of “Design” problems and those of stakeholders. In this cooperative or participatory design activity of interpretation, information gathering and facilitation, users make critical decisions in the design process. This turned out to be an acceptable way of dealing with these “wicked” problems [25]. Sanders and Stappers provided an historical overview of participatory design and co-design [26], as they underline a transition from a user-centred approach, towards a user that actively participates in the design process
- ***Social Model.*** As design activities are enabled by the social community in which they are situated, a growing conscience of the designers’ role in the society marked the beginning of a social model of the design process [27]. Hereby, professional reasoning is not a personal competency but based on the collective wisdom of a community of practitioners, where the scope was more than to promote social and economical sustainability. Buccarelli and Vincenti underlined the impact of design engineers’ decisions in people’s everyday life, as well as described the nature of the process as a sense of 'social construction [28].
- ***Normative Model.*** In this prescriptive model, “Design” solutions are fitted to certain standards, values and conventions in accordance to their role and responsibility. The normative framework can be understood as guidelines that should be followed in order to satisfy certain criteria, for example ideals of user experience [29].

Discussion: Strategising and practicing business versus design

Strategic planning has been associated with a rational, objective, structured, analytical and convergent mindset that most executives consider abstract and distant from their daily work. Strategic thinking on the other hand has often been seen as complementing planning by involving a creative, divergent and synthetic mindset and associated practices [30].

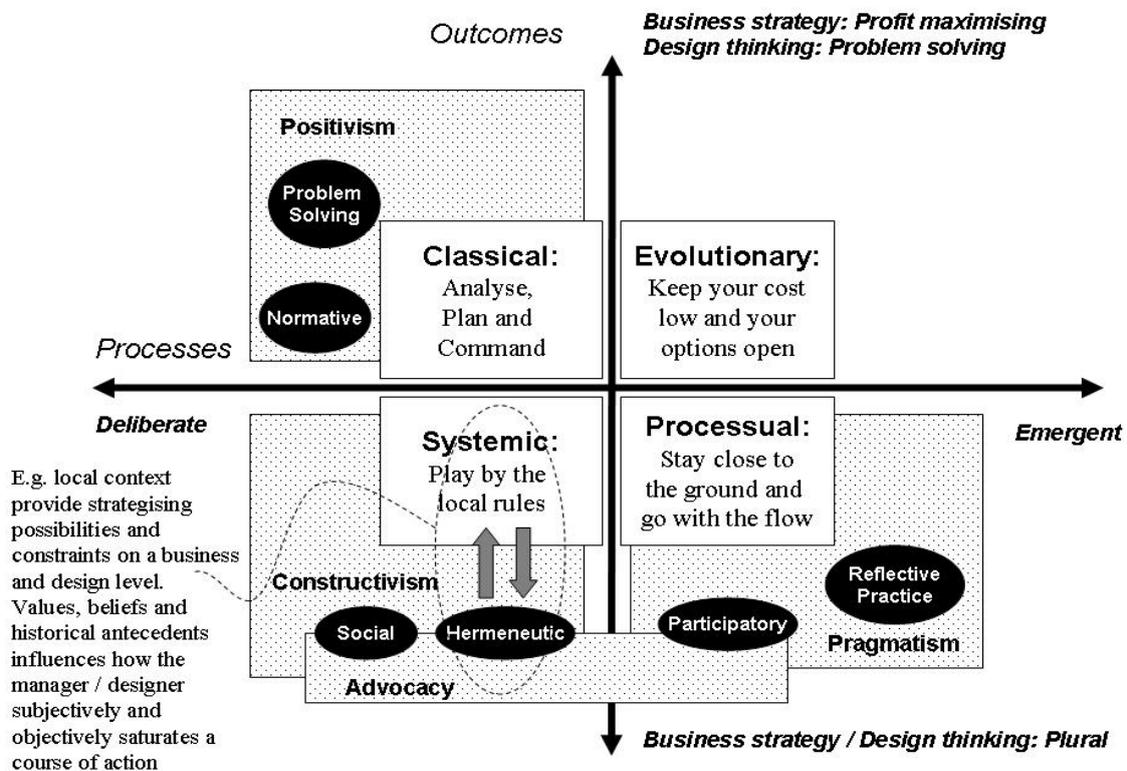


Figure 2 Extension of generic strategies to models of design reasoning based upon philosophical worldviews (adapted from Whittington [11], 2001, figure 2.1, p.10)

With respect to figure 2 and the gradual build up of this article, the author argues that there are similarities on how different generic strategies and models of design reasoning are positioned according to process and outcome. Although variables are different for characterising strategy and design model, intentions as well as tension fields are clearly exemplified. These similarities were also illustrated by other authors, such as Jacobs and Heracleous [31]. They have proposed a view of strategizing as a playful design practice and illustrate this view by describing a process for fostering effective strategic play. In this "Strategizing through playful design" approach, individuals explore their strategic issues through a group process of sense making that involves a facilitated playful mode of interactions with metaphors. These interactions tell stories that become explicit when the structures are decoded and made sense of by the group that built them. The stories spur conversations and generative dialogues about the strategic challenges that the group faces.

From a methods perspective, Barry and Elmes [32], argued strongly for the potential of a narrative approach to strategy. They defined narrative as 'thematic sequenced accounts that convey meaning from implied author to implied reader' and proposed that the narrative metaphor could be relevant to 'both the telling' of strategy (i.e., the use of narrative in processes of strategizing) 'and the told' (i.e., the constitution of strategy as a form of fiction that creates a story about the future). Storytelling is a formalized *practice* or management technique in itself. For example, Heil and Whittaker [33] described a consulting approach that involves a professional storyteller in creating an 'appropriate' strategic narrative that will

promote cohesion by giving ‘the people in the organization a voice rather than telling the story of the observer’ [33]. Finally, scenario analysis represents another formal strategy practice in which narrative plays a key role. Although scenario techniques themselves may involve a number of methods that can be qualitative or quantitative (e.g., cross-impact models, etc.), the tools generally lead to a set of alternative futures presented in narrative form.

Recapturing the practice of design, significant efforts concentrated on investigating a specific approach usually referred to as a *user-centred design* [34]. This approach implies that product development should start from a deep analysis of user needs. In practice, researchers spend time in the field observing customers and their environment to acquire an in-depth understanding of customers’ lifestyles and cultures to better understand their needs and problems [35]

Unlike user-centred design processes, design-driven innovation is hardly based on formal roles and methods, such as ethnographic research [36]. However, its approach may be considered as a manifestation of a *reconstructionist* or *social-constructionist* view of the market, where the market is not “given” a priori but is the result of an interaction between consumers and firms [37]. Hereby, users need to understand the radically new language and message, to find new connections to their socio-cultural context, and to explore new symbolic values and patterns of interaction with the product [38].

In terms of context-based innovation, the user-product relationship is not something that takes place in isolation but is part of a larger context, consisting of all kinds of factors. Examples of factors are social patterns, technological possibilities, and cultural expressions that affect the way people perceive, use, experience, respond, and relate to products [39]

According to Hekkert and Van Dijk [40], these factors change over time and are determined by people’s behaviour, values, and preferences.

In recent years, a strong emphasis on the human / user within a “social” context within the field of designing, calls for the same interactive research and exploration methods as in business strategising. Considerable explicit discussion of, and advocacy on behalf of, the use of narrative accounts has taken place [41]. Moreover, many distinctions that design-study researchers make between traditional experimental methods and design-study methods (e.g., narrative accounts and interpretive frameworks) reflect the broader debate among psychologists and philosophers on positivist and “post positivist” science [17], and the need for a new epistemology that meets the needs of “human sciences.” For those who take the narrative turn, it is important to understand that one must venture beyond the conventional aims of positivist science with ideals of reductionism, causal explanation and prediction” [42].

Conclusion

To achieve a suitable innovation strategy for an organisation, a more holistic approach should be adopted towards strategising at management as well as design level. Dependent on its business philosophy, leaders should evaluate the matching of relevant generic strategies with their respective models of design reasoning when they want to embark on a certain innovation approach. Furthermore, the prevalence of use of interactive research methods (*e.g. narratives*) to gain a better understanding of actors’ experiences, needs and wants, has infiltrated the practice of business strategising and design thinking significantly. In terms of business strategising a shift towards plurastic strategising and practice embracing a wider range of stakeholders, can be seen. This shift in strategising has brought business management and design closer to each other, especially with respect to their goals and ambitions towards innovation.

References

- [1] Ansoff, H. I. *“Corporate Strategy: An Analytic Approach to Business Policy for Growth and Expansion”*. Harmondsworth: Penguin, 1986.
- [2] Christiansen, J. A. *“Building the Innovative Organization”* London: MacMillan Press, 2000.
- [3] Utterback, J. M., & Abernathy, W. J. *“A dynamic model of process and product innovation”*. *Omega*, 3, pp 639–656, 1975.
- [4] Crawford, C. M. *“New Product Management”* (4th ed.). Boston: Richard D. Irwin, Inc, 1994.
- [5] Veryzer, R. W. *“Discontinuous Innovation and the New Product Development Process”*. *Journal of Product Innovation Management*, 15, pp 304–321, 1998.
- [6] Teece D.J., G Pisano, and A. Shuen. *“Dynamic capabilities and strategic management”*. *Strategic Management Journal* 18/7: pp 509-533, 1997.
- [7] Bravo Ibarra, Edna Rocío; Mundet Hiern, Joan; Suñé Torrents, Albert. *“Dynamic capabilities and innovation: a Multiple-Case Study”*. Universitat Politècnica de Catalunya. *Working paper* Accessed: 08.05.2012 <http://upcommons.upc.edu/e-prints/handle/2117/2983>, 2009
- [8] Carter, C., Clegg, S. R., & Kornberger, M. *“Strategy as practice?”* *Strategic Organization*, 6, pp 83–99, 2008.
- [9] Whittington, R. *“Completing the practice turn in strategy research”*. *Organization Studies*, 27, pp 613–634, 2006
- [10] Rasche, A., & Chia, R. *“Researching strategy practices: A genealogical social theory perspective”*. *Organization Studies*, 30, pp 713–734, 2009.
- [11] Whittington, R. *“What is Strategy- and does it matter”*. 2nd edition, Cengage Learning EMEA, UK, 2001
- [12] Lie, U. *“Framing an Eclectic Practice; Historical Models and Narratives of Product Design as Professional Work”* (Ph.D. dissertation). Department of Product Design, Faculty of Engineering Sciences, Norwegian University of Science and Technology, Trondheim, 2012.
- [13] Sloan, A.P. *“My years with General Motors”* London: Sedgewick & Jackson, 1963
- [14] Einhorn, H.J., & Hogarth, R.M. *“Behavioural decision theory: Processes of judgment and choice. Annual Review of Psychology*, 32, pp 53-88, 1981.
- [15] Cyert, R.M. and March, J.G. *“Organisational factors in the theory of monopoly”* *Quarterly Journal of Economics* 70 (1) p.44-64, 1956
- [16] Creswell, J.W. *“Research design: Qualitative, Quantitative, and Mixed Methods Approaches”*, Sage Publications, 2009.
- [17] Phillips, D.C. and Burbules, N.C. *“Postpositivism and Educational Research”*. Rowman & Littlefield, New York, 2000.
- [18] Lincoln, Y.S. and Guba, E.G. *“Naturalistic Inquiry”*, Newbury Park, CA: Sage Publications, 1985
- [19] Cherryholmes, C.H. *“Notes on Pragmatism and Scientific Realism”*, *Educational Researcher*. Vol. 21, No. 6. pp 13-17, 1992.
- [20] Simon, H. A. *“The Sciences of the Artificial”* (3rd ed.) Cambridge, MA: MIT Press, 1996.
- [21] Prasad, A. *“The contest over meaning: Hermeneutics as an interpretive methodology for understanding texts”*. *Organisational Research Methods*, 5 (1): pp 12-33, 2002
- [22] Bamford, G. *“From Analysis/Synthesis to Conjecture/Analysis: A Review of Karl Popper’s Influence on Design Methodology in Architecture”*. *Design Studies*, 23, pp 245-261, 2002

- [23] Coyne, R. and Snodgrass, A. "Models, metaphors, and the Hermeneutics of Designing". *Design Issues*, 9 (1), pp 56-74, 1992
- [24] Schön, D. A. "*The Reflective Practitioner: How Professionals Think in Action*" (2nd ed.). Aldershot: Arena, 1995.
- [25] Clarke, M., and Stewart, J. "Handling the Wicked Issues". *The Managing Care Reader*. Eds. J. Reynolds, J. Henderson, J. Seden, J. Charlesworth & A. Bullman. London: Routledge. 273-280, 2003
- [26] Sanders, E.B.-N. & Stappers, P.J. "Co-creation and the new landscapes of design". *CoDesign*, 4(1), pp 5-18, 2008.
- [27] Papanek, V.P. "*Design For The Real World: Human Ecology and Social Change*", Academy Chicago Publishers, 2005.
- [28] Bucciarelli, L. "An Ethnographic Perspective on Engineering Design", *Design Studies*, vol. 9, pp 159-168, 1988.
- [29] Van Rompay, T. J. L. "Product expression: Bridging the gap between the symbolic and the concrete". In: H. N. J. Schifferstein & P. Hekkert (Eds.), *Product experience*. pp. 333-351. Amsterdam: Elsevier, 2008
- [30] Heracleous, L. "Strategic thinking or strategic planning?", *Long Range Planning*, Vol. 31 No. 3, pp. 481-487, 1998.
- [31] Jacobs, C. D., & Heracleous, L. "Strategizing through playful design". *The Journal of Business Strategy*, 28(4), pp 75-80, 2007
- [32] Barry, D., & Elmes M. "Strategy retold: Toward a narrative view of strategic discourse". *Academy of Management Review*, 2, pp 429-452, 1997.
- [33] Heil, D., & Whittaker, L. "An ontological foundation for strategic management research: The role of narrative". *Research Methodology in Strategy and Management*, 4, 369-397, 2007.
- [34] Veryzer, R. W., & Borja de Mozota, B. "The Impact of User-Oriented Design on New Product Development: An Examination of Fundamental Relationships". *Journal of Product Innovation Management*, 22, 128-143, 2005.
- [35] Belliveau, P., Griffin, A., & Somermeyer, S. M. "*The PDMA toolbox for new product development*". Hoboken: Wiley, 2004
- [36] Verganti, R. "*Design Driven Innovation*". Boston, MA: Harvard Business School Press, 2008
- [37] Kim, W. C., & Mauborgne, R. "Blue Ocean Strategy: From Theory to Practice". *California Management Review*, 47(3), pp 105-121, 2005.
- [38] Geels, F. W. "From Sectoral Systems of Innovation to Socio-Technical Systems, Insights about Dynamics and Change from Sociology and Institutional Theory". *Research Policy*, 33, 897-920, 2004.
- [39] Hekkert, P. "Productive Designing: A Path to Creative Design Solutions". In *Proceedings of the Second European Academy of Design Conference*, Stockholm, 1997. Retrieved July 10, 2010, from <http://www.svid.se/ead.htm>.
- [40] Hekkert, P., & Van Dijk, M. "Designing from context: Foundations and applications of the ViP approach". In P. Lloyd and H. Christiaans (Eds.), *Designing in Context: Proceedings of Design Thinking Research Symposium 5*. Delft: DUP Science, 2003.
- [41] Shavelson R.J., Phillips D.C., Towne L. & Feur M.J. "On the Science of Education Design Studies". *Educational Researcher* 32(1): pp 25-28, 2003.
- [42] Bruner, J. "*Acts of Meaning*". Harvard University Press, 1990.