

# Forty Years of Research in Design Management: A Review of Literature and Directions for the Future

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## ABSTRACT

Defining the research in Design Management (DM) involves the intersection of two disciplines: management sciences and design sciences. We focus on design management research and summarize the diversity of the relationship between these two interdisciplinary fields through a study of the international literature published between 1977 and 2017 on the subject. Firstly, the hybrid territory of design management is defined through its keywords and their evolution; using various definitions of design management, a representation of the place of design within organizations then starts to emerge. Secondly, the analysis focuses on the five key themes of design management developed in the literature—the value of design, the methods and skills of design, the tools of design, its integration in other functions, and the theme of “better manager by design”—as well as the resulting models. Finally, this review of the literature highlights the emergence in the discourse of two complementary forces: design management and design leadership.

*Keywords:* design management, design leadership, sciences of design, design strategies.

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## INTRODUCTION: THE ORIGINS

This article aims at showing the emergence of Design Management (DM) through the main theories published on the subject between 1977 and 2017. Our approach is first educational—to make it easier for management to accept and understand design, and vice versa, management by design: “The function of design in a manufacturing company must be a primary responsibility of management” (Archer, 1969), and to help future DM researchers with an international perspective. This is a literature review which is going to analyze the subject chronologically, but it is less a state of the art of design history research, than a reflection on a way that leads to new future perspectives to a theoretical thread. For that, a desk research was conducted along more than four months and shared with international researches. One first paper was published in French (Borja de Mozota, 2018) and then two other papers with different/local perspectives are being published, based on the main work.

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This one, in English, that covers Americas brings, along with primary data collected, the research thread that South America is developing. The next one, an Asian version, is yet to come with its perspectives. Our aim is to build a network of research perspectives and futures of Design Management. It is not about the definitions per se, but the spirit of making meaning to an international research perspective on the edge of another cycle, after 40 years of development.

Our position was to work on the subject through the research on DM, research which looks at the role of designers in companies, the reality of the relationship between designers (regardless of their professional status or their design discipline) and their clients companies (regardless of their industry); and finally, raises the question of the value of design and its tools for companies. Although academic, we considered books as the main substrate for the core of the definition of design management, as they touch managers and large audience faster. Research papers come along as perspectives and future.

When trying to get an overview of the history of design in management, we can but note that the design function—which used to be limited to certain industries and companies (fashion, automobile, decoration, B&O, Alessi, Herman Miller Braun, LEGO)—now evolves in other areas, particularly recently, with success, in IT and digital industries: Apple, IBM, Lenovo, Microsoft, Samsung, Sun Systems, Google, Amazon.

In 2011, an article by Hobday *et al.* published in the journal *Design Issues* highlighted the fact that design did not figure, or figured very little, in the big trends of innovation research. Our aim is to continue in the same vein making design management research more visible by looking at its participants and research networks. Can we uncover key points common to the past, present, and future of DM?

## **1. DESIGN MANAGEMENT (DM): CONTEXT AND EVOLUTION**

### **1.1. The Context and Resistance Facing Design Management**

Design Management is a space between design science and management science, but it is a “forced” interdisciplinary field because neither managers nor designers are truly interested in it. So, what are the obstacles to its development? Among many others, we found three big international reasons: a) the institutes and schools on both sides have never or little connected; b) a lack of interest from management for “things,” for the concrete, the aesthetic and c) Designers’ lack of interest in, and sometimes rejection of management and the

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measure of the value of their activity. And for Latin America countries one more reason: translation mishaps that leads to theoretical mistakes.

**The institutes and schools on both sides have little or never connected.** Design is mostly taught in art schools linked to Faculty of Arts or Engineering and therefore far from corporate environments. Management science comes from economic science and is found on different university campuses or in business schools. Students, teachers, and researchers on both sides have few opportunities to meet, even though several interdisciplinary cursus have emerged the last couple of years putting engineering students, designers, and managers together to work on innovation projects. (Wolff et al, 2013)

**A lack of interest from management for “things,” for the concrete, the aesthetic.** Peter Gorb explains that managers are surrounded by artifacts, but only too few managers accept the fact that objects dominate their world and inspire their mode of thinking. This disregard for objects originates in our 19th century Western culture and in the educational system supporting it. We are taught to value ideas above action, spiritual things above material things, the conceptual above the pragmatic, and logic above intuition. Consequently, managers are often incapable of appreciating the importance of “things” and view design as either a mysterious talent, or a compensatory capacity for the illiterate.

**Designers’ lack of interest in, and sometimes rejection of management and the measure of the value of their activity.** In management, however, in order to exist and be tangible, a subject has to be measured. In practice, designers will tend to be wary of the power of numbers and to criticize business viewed only as the pursuit of short-term profit. In 1989, Tom Peters advised designers to stop complaining and invent a measuring tool, the only way to let design into board meetings. He suggested measuring perception. Designers have to translate their goals into facts and figures in the decision processes, and it is not that difficult: “design as shaping perceptions” (Phillips Peter, 2004). We will see later that the research in design management has indeed developed models and indicators available to designers (Borja de Mozota, 2006, 2011; Westcott *et al*, 2013).

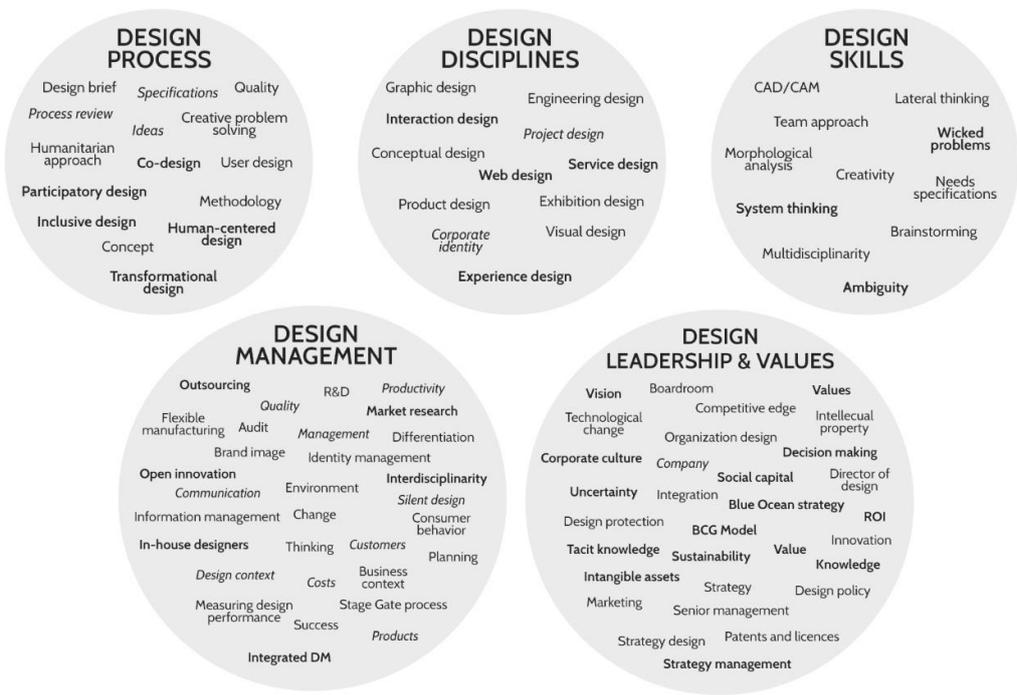
**Translation mishaps that leads to theoretical mistakes.** For Latin American countries, where Spanish and Portuguese are the languages spoken, design management is commonly translated as “management of design”, leading to the wrong understanding of managers commanding design processes and, as the words are common sense, detaching the understanding of the construct of DM. This reinforces the rejection explained above even inside some design communities.

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**But mentalities are changing.** As Buchanan (2004) wrote “design which refuses to acknowledge the importance of accounting, finance, human resource management, strategic planning, and vision building is useless design.” Let us look at the history of design management in design science and vice versa.

**1.2. The Words of Design Management: evolution of theoretical perspectives**

A comparative analysis of the two fundamental works on design management research (*Handbook*, Oakley *et al.*, 1990 and *Handbook*, Cooper *et al.*, 2011, which select the most notable research articles over a decade) shows that research in design management is getting organized and internationalized. The authors almost all come from design (practitioners or teachers) and inspiring thinkers of DM come from both disciplines: from management (M. Porter, T. Peters, T. Levitt, P. Drucker, R. Hayes, G. Hamel) and from design: experts in the design process (Beitz, Pahl, Broadbent) and in “design thinking” (T. Brown, R. Martin, R. Buchanan).



**Figure 1. The Words of Design Management.**

In bold, the new words of 2011; in italic, the words disappearing.

A closer analysis of the words most frequently cited in the indexes of both Handbooks shows five major themes characterizing DM (Figure 1): the process of design, the disciplines of design, design skills, the tools of Design Management, and design leadership and values.

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We notice that DM progressively integrates words used in management: brand, innovation, strategy, value, change, and moves away from a vision of DM as only managing design projects. As well, Design Management Review journal key words in the last 30 years shows us that design managers integrated strategic words to design culture.

A few definitions of Design Management throughout History can be organized around several clusters, showing design management words as follows. Design Management...

**... as managing “good design” within a company...** As Gorb (1990) understands that “Good design is: managing a design agency, teaching management to designers, teaching design to managers, managing design projects and the organization of Design Management: the place of design in the company structure and the changes necessary to make this relationship more efficient.” As well as the management of a visual system for the company (products, services, documents, spaces) and the coherence of all the disciplines of design around a brand design strategy (Borja de Mozota, 1990); a process of managing change to create efficient companies as well as good products (Gunz, 1990); management principles which makes a commitment to “good design” a crucial stake during meetings (Bernsen, 1990).

**... to help reach the company’s goals or to improve growth**, understanding Design Management is the implementation of design as a formal program of activity in a company by communicating its pertinence when it comes to the company’s long-term goals, and by coordinating design resources to all the levels of decision to reach the company’s goals (Borja de Mozota, 2002) and for economic growth, as sustained by DMI.

**... which necessitates integrating design in the processes and other functions of the company**, understanding that DM is a resource, based on process, strategy and competencies shared among companies structures and perceptions (Wolff and Amaral, 2016) which needs to be integrated in the structure at three levels: functional, visual, and conceptual (Svengren, 1995). In this context, the design manager plays three roles: a strategic role, formulating the design strategy and conversation with senior management; a tactical role, coordinating with the directors of other functions in the company; and an operational role, initiating new products and services—invisible design—and shaping them—visible design (K. Chung and Y.-J. Kim, 2011).

**... and can lead to a vision of DM as an activity aiming at rethinking design in organizations (Blum, 2017)** with the principles, the methods, the attitude, and the philosophy of design. In their seminal work *Managing as Designing*, Boland and Colopy

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showed that in order to recreate meaning, one had to establish a dialogue very early on with the designer in building a vision, and thus to associate with DM a design leadership. The responsibilities of the design leader have to pass through all the functions of design, just as the customer's experience has to encompass all touchpoints (Lockwood, 2011). As Junginger (2011) believes, "if design can have a transcending effect, it itself has to go beyond its genesis for a radical school of thought addressing human affairs to emerge. Design Management has to ask the most important questions: how is the vision of design and DM unique? What are its fundamental principles? What is its distinctive philosophy?" This thread of comprehension leads to a solid bridge with strategic design, a growing research approach in Latin America streaming from Italian Strategic Design works from Mauri (1996) and Zurlo (1999). Authors as Boland and Colopy (2004), Cautela (2007), Buchanan (2015), Michlewski (2015) and Muratovski (2015) lay the foundations for this perspective.

Rachel Cooper (2011), former president of the European Academy of Design published a chronological review representing DM Domain and Criteria and the evolution of the field by a matrix around four structural themes. These four themes of DM are: DM seeks to create value, to solve problems, to improve the company's design skills, and to create a design leadership for reaching the company's goals (Table 1).

**Table 1**

***The chronological evolution of Design Management and its themes***

|  |  |   |  |   |
|--|--|---|--|---|
| <b>DM adds value through...</b>  | Economic value (Aesthetics, Differentiation)<br>Product value (Quality)<br>Perception Value            | Process value (Coordination, Problem-solving)   | Human value (Human and cultural transformation)  | Strategic conversation value (Building skills Framing problems)           |
| <b>DM solves design problems relating to...</b>  | All aspects of company's artifact  | Managing innovation   | Strategic diagnosis<br>Changes in society, in politics                                       | Cultural changes Digital transformation Design for all                    |
| <b>DM develops and fuels design skills in the function of...</b>   | Direction Marketing<br>Operations<br>Communications  | R&D<br>Interdisciplinary innovation team  | Finance<br>Human resources   | Every function in the company   |
| <b>Design leadership (design direction, artistic direction) helps the accomplishment of goals such as...</b> | Create a brand and an identity (coherence between design disciplines)<br>Create profit for the company | Create new products and services<br>Improve the innovation process and its efficiency | Make companies aware of design strategy<br>Change for customer oriented and creative culture | Make a company sustainable in a globalized context of societal well-being |
| <b>PERIOD</b>  | <b>1965 - 1992</b>   | <b>1993 - 2005</b>  | <b>2005 - 2014</b>   | <b>2015 - 2017</b>  |

Note. Adapted from R. Cooper *et al. Handbook*, 2011.

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Following periods is possible to understand the evolution of DM as a complex and multi approach theory, based on arising design value and allowing companies to benefit of it. The experience of inserting design in an organization, or DM, is one of the forecast theories we can foresee in the future and is discussed in the third session of this paper.

## 2. KEY THEMES OF DESIGN MANAGEMENT

This literature review defines the themes and criteria of the DM domain: value of design, methods and skills, DM tools, integration in other functions, and “better manager by design”. We are now going to examine them in more details.

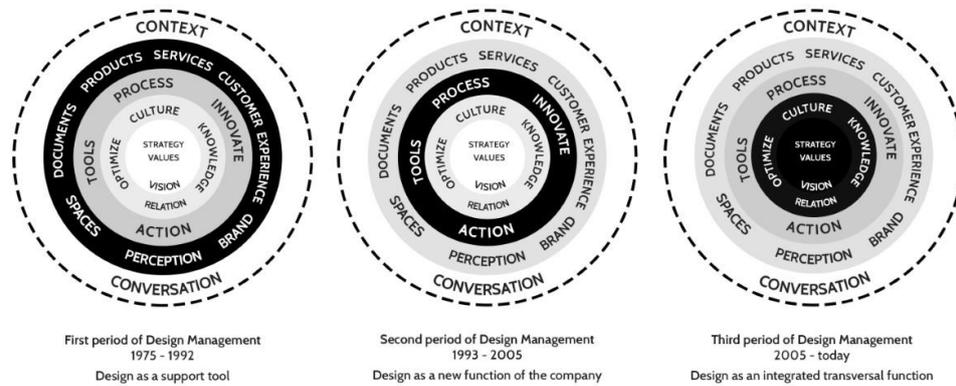


Figure 2. The evolution of DM throughout history.

### 2.1. The Value of Design

This theme allows us to better define the difference between design and Design Management. In management, one talks of value and of tools to measure value: ROI, indicators, KPI. Key authors here show that this value is first economic, of perception, then managerial, industrial, sustainable, then measurable and financial (ROI, indicators of the impact of design), Also that it evolves toward a subjective, qualitative, humanist, emotional, sensorial, intangible, immaterial, and strategic dimension using qualitative indicators as shown in table 2a.

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Table 2a

**Criteria 1: Design Management and the value of design**

| Criteria 1      | 1975 - 1992   | 1993 - 2005   | 2006 - 2017  |
|-----------------|---|---|--|
| Value of Design | Process value (Gorb, 1990)  | Industrial value (Cooper and Press, 1995)               | Brand, marketing and sensorial value (Mathieu, 2006) |
|                 | Economic value (Walsh, 1992)  | Stock market value (Hertenstein)                        | ROI Design (Pitkanen, 2012)                          |
|                 | Measuring design (Bauhain-Roux, 1992) (Lorenz, 1986)                      | Value of design awards (Gemser)                         | Design impact (Picaud, 2014)                         |
|                 |   | Customer perception value (Phillips, 2004)              | Business value (Viladas, 2008; Minivielle, 2007)     |
|                 | Sustainability value (McDonough, 2002)                                    | Vision value (Hands, 2009)                              |  |
|                 | Coordination, innovation and transformation value (Borja de Mozota, 2002) | Intangible values (Liedtka, 2001, 2013; Verganti, 2009) | Financial value (Aspara, 2009)                       |

## 2.2. Design Methods and Skills

The management issues raised here are: what role design skills play in a company's expertise? How can design skills be dealt with in knowledge management (KM)?

Design methods and skills (Table 2a) are first the design process, the creative and visualization capacities of design within the context of brand creation and customer experience. They then lean towards prospective methods and a co-design process, and usability methods where the designer's qualities of observation, dialogue, and empathy in the project are appreciated to improve both the products and the processes (Veryzer *et al.*, 2005)—co-design with the users (Design Probes), but also co-creation with the other experts in project teams.

DM here helps the co-production of goods or services through which the company co-creates value for the user and the user coproduces resources for the company (Martin, 2003).

Finally, recently, methods of sustainable design (eco-design) have been adopted. Many books have been published on design methods and this increases the transparency of the creative process.

In terms of knowledge management, research in DM has helped the qualification of design skills (Darras, 2014). Therefore, giving credibility to the field of Design Leadership and answering the question of the specificity of a design strategy in management. How can designers' attitude and ability to take risks and tackle complex problems with a holistic and

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human-focused way of thinking help shape the culture within companies? (Michlewski, 2015).

**Table 2b**

**Criteria 2: Design methods and skills in DM**

| Criteria 2                       | 1975 - 1992                     | 1993 - 2005                                      | 2006 - 2017   |
|----------------------------------|---------------------------------|--|---|
| <b>Design methods and skills</b> | Creativity (Oakley, 1990)       | Co-design (UOD Veryzer <i>et al.</i> , 2005)     | Virtual reality (Richir)  |
|                                  | Visualization (Gorb, 1990)      | Users participating in innovation (Akrich, 2006) | Holistic approach (Urvoy, 2009)                                 |
|                                  | Design process (Quarante, 1984) | Design probes (Mattelmaki, 2006)                 | Co-creation (Sanders, 2008)                                     |
|                                  | CAD (Medland)                   | Design methods (Bruce, 1998; Laurel, 2003)       | Eco-design (Guilloux, Cho, 2011)                                |
|                                  | Brands (Ollins)                 | Design principles (Lidwell, 2003)                | Design methods (Martin <i>et al.</i> , 2013; Van Patters, 2016) |
|                                  | Experience models (Rhea)        | Prospective skill (Inns, 2007)                   | Design skills (Guillerin <i>et al.</i> , 2010; Nussbaum, 2013)  |
|                                  |                                 |  | Expertise, interpersonal skills (Darras, 2014)                  |
|                                  |                                 |  | Design attitude (Michlewski, 2015)                              |

How can design thinking, with its prototyping and experimental methods make collaborators more creative and more aware of global transformations? (Nussbaum, 2013). For a more radical change on design, one may view design skills— no longer only through the outputs of the design process —as a company core competency, a resource to help build its vision and its strategy (Borja de Mozota, 2011).

### 2.3. Design Management Tools

Here we question of the management of a design agency or a design department within a company. The classic elements of any organizational function can be found (Table 2c), namely: brief, recruitment, audit, and scorecard. But we also deal with the issue of the levers of design in the company: offer, brand, customer relations, innovation process, and strategic choice.

How are DM tools going to integrate the company's processes and tools according to the type of design governance: internal, external, hybrid? What are the useful tools necessary to manage a design department on a day-to-day basis (DME Staircase)?

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Table 2c

**Criteria 3: Design Management tools**

| Criteria 3                                | 1975 - 1992  | 1993 - 2005  | 2006 - 2017   |
|---|--|--|---|
| <b>Design methods and skills</b>          | Design without management is pointless design (Buchanan, 1990) | The levers of design (Cooper, 1995)  | DM to manage a design agency (Branson, 12013)                               |
|   | Design brief   | Three levels of DM: action, function and vision (Bruce <i>et al.</i> , 2002) | DM as before and after of the design process (Cautela <i>et al.</i> , 2012) |
|   | Design guidelines  | Design ladder (Danish Design Council Herman, 2002)                           | DME Staircase (Koostra, 2009)   |
|   | Design audit   | Designence Model (Borja de Mozota, 2006)                                     | Tools of the design function (Zsostak, 2015; Lockwood, 2008)                |
| Managing design projects (Topalian, 1980) |  | Design thinking (Brown, 2010; Lietka, 2017)                                  |   |
|   |  | General volumes on DM tools (Hands, 2009; best, 2010)                        |   |

These criteria are useful to classify companies according to their level of understanding of design (Design Ladder) and according to the importance given to design in the three decision-making levels: operational, tactical, and strategic. Here, DM tools are tactical: their goal is to prove the efficiency of the design process by using design disciplines to accompany change: see the role of UX design in the digital transformation of companies.

## 2.4. Integration of Design within Other Functions

The question raised here is the transversal quality of the design function and its relation to a company's other functions (Table 2d).

Table 2d

**Criteria 4: DM by integrating design in the company**

| Criteria 4                              | 1975 - 1992  | 1993 - 2005   | 2006 - 2017   |
|---|--|---|---|
| <b>Integration with other functions</b> | Triangle design-engineering-marketing (Lorenz, 1986) | Design and financial function (Nixon, 2016)   | Integration within the innovation function:<br>- CK Theory (Le Masson and Hatchuel, 2006)<br>- Multidisciplinary innovation (Herman, 2009)<br>- Association of multiple innovation processes (Keeley, 2013) |
|   | NPD, integration marketing (Borja de Mozota, 1990)   | Coordination between the R&D function and marketing function (Bruce <i>et al.</i> , 1998) | Integration within corporate strategy (Verganti, 2009)  |
|   | Difficulty integrating design (Aslin)                |   |   |

If some researchers work on the difficulty of integrating design in other functions—hence on the question of the execution and implementation of a design strategy —, other researchers rather focus on how design is integrated within every function, one by one, when in reality the design direction is more likely to manage several functional interfaces simultaneously.

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Initially, the design-marketing-engineering triangle is seen as fundamental, so we need to observe the design-marketing function and design-brand interface, or most importantly the partnership of design and R&D and how design helps coordinate R&D and marketing in the innovation function (Le Masson and Hatchuel, 2006; Keeley, 2013). Recently, other functional interface have been explored, such as the relationship between design and finances (Nixon, 2016) and between design and human resources.

Still, the relationship between “design and the company’s portfolio ” is coming back in full force with the recent issue of customer experience and services in a digital world—which leads one to work on the integration of design in the “management of information systems” function, and its corollary, the integration of process innovation and the stakes of multidisciplinary (SII, design, brand) in the teams to make the customer’s journey efficient and the brand discourse fluid.

## 2.5. Design Leadership: “Better Manager by Design”

The question raised here is on designing our future world, about design leadership, design direction (Table 2e). It means talking about the company strategy with prospective design, strategic design. Empathic design can help managers be aware of the challenges of today’s world and to imagine and solve the complex problems they face every day; since the specific qualities of designers align with the profiles of the 21st century’s new managers.

**Table 2e**

**Criteria 5: “Better manager by design” – Design Leadership.**

| Criteria 5  | 1975 - 1992   | 1993 - 2005   | 2006 - 2017   |
|---|---|---|---|
| <b>“Better manager by design”<br/>Design leadership</b> | Design as weapon (Gorb, 1990)   | Abilities (Bruce and Jevnaker, 1998)                    | Strategic design (Nixon, 2016; Ertel, 2014)   |
|   | Successful case study ( <i>Handbook</i> , Freeze, Potter and Finiw, 1990) | Designer manager (Boland, 2004: creating sense “Weick”) | Design your life (Mazini, 2015; Burnett, 2013)<br>Think like a designer (Brown, 2010; Martin, 2009)   |
|   | Performance ( <i>Handbook</i> , Vitrac, Wilson, Bernsen and Potter, 1990) | Wicked problems (Cross, Thackara)                       | Enterprise design (Guenther, 2013)<br>Design leadership (Hands, 2009, Turner, 2013)<br>Business model canvas (Osterwalder and Pigneur, 2011)<br>Killer apps and macroeconomics (Cho, 2011)<br>Speculative design (Dunne <i>et al.</i> , 2013)<br>Framing innovation (Dorst, 2015) |

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How can “managers become better managers” with design? By moving away from the MBA and by developing a “T” profile, by becoming more familiar than ever with design research in order to see and build the company’s strategy and to view the future with the involvement of designers, whose way of thinking now penetrates not only AI labs, robotics, additive manufacturing, but also our lives in need of being reinvented.

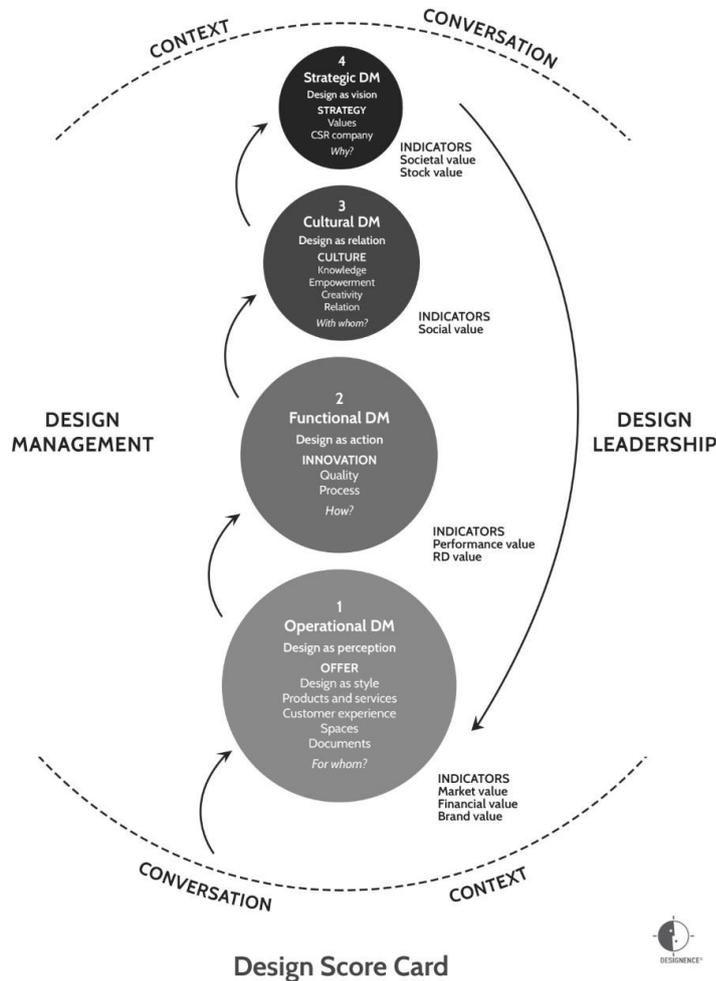
Several new “designer manager” profiles have recently cropped up: designer coach, designer startup entrepreneur, designer facilitator (Calabretta *et al.*, 2016). Just like the pioneering IDEO agency, designers are editors of co-design tools: games, cards, intermediary objects, scalable tools of team organization (Noda, Collectif BAM). This demonstrates that designers do not limit themselves to innovative products and services but are also interested in facilitating the dialogue between design and companies at large. Surveys of the design market in the U.S. (John Madea) show that big strategy consulting companies have acquired large design agencies, to whom they have handed the digital transformation of their client companies.

### 3. DESIGN MANAGEMENT MODELS

The publication of the *Design Management Academic Journal*, by the Design Management Institute started in 1989, enhanced the scientific approach of DM and the popularization of the ideas among scholars and managers. Between 1993 and 2005, academic conferences on DM, focusing research, were developed on a global scale, with conferences in Copenhagen (1992), in Paris (1994), at the Pratt Institute (1999), in Frankfurt (2000), in Boston (2001), in Seoul (2004, 2006). And after this period, in Shanghai (2008-2011), at ESSEC in France (2008), in London (2014) and again in Boston (2016) among others.

The development of this period resulted in efforts to establish key models showing how executives understand the value of design in their companies around three levels of design integration (the Danish Design Council’s Design Ladder, 2002, and the Designence™ model, 2006).

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**Figure 3. The Four Levels of Design Management: Designence.**

Those models are an important part of the development of DM as a scientific research area, as they lay the foundations to the works to come and helped researchers of all around the world to explore DM.

From 2006 to 2017, a shift can be noticed on the models published. On one side, we see the trend of UX design and the digital transformation of companies that allowed models of design thinking to be applied in innovation teams (Lean Startup and Lean UX, Liedtka, 2011).

On the other side, Design Management institutions have developed models for the management of the design function in the company (DMI Design Maturity Grid, Figure 4). These tools and scorecards are equally invitations to create indicators measuring design (Picaud *et al.*, 2014). These scorecards are used and diffused through Design Management

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prizes (Design Management Europe Award and DMI Awards in the U.S., and of training programs for design leaders (see PARK in Germany).

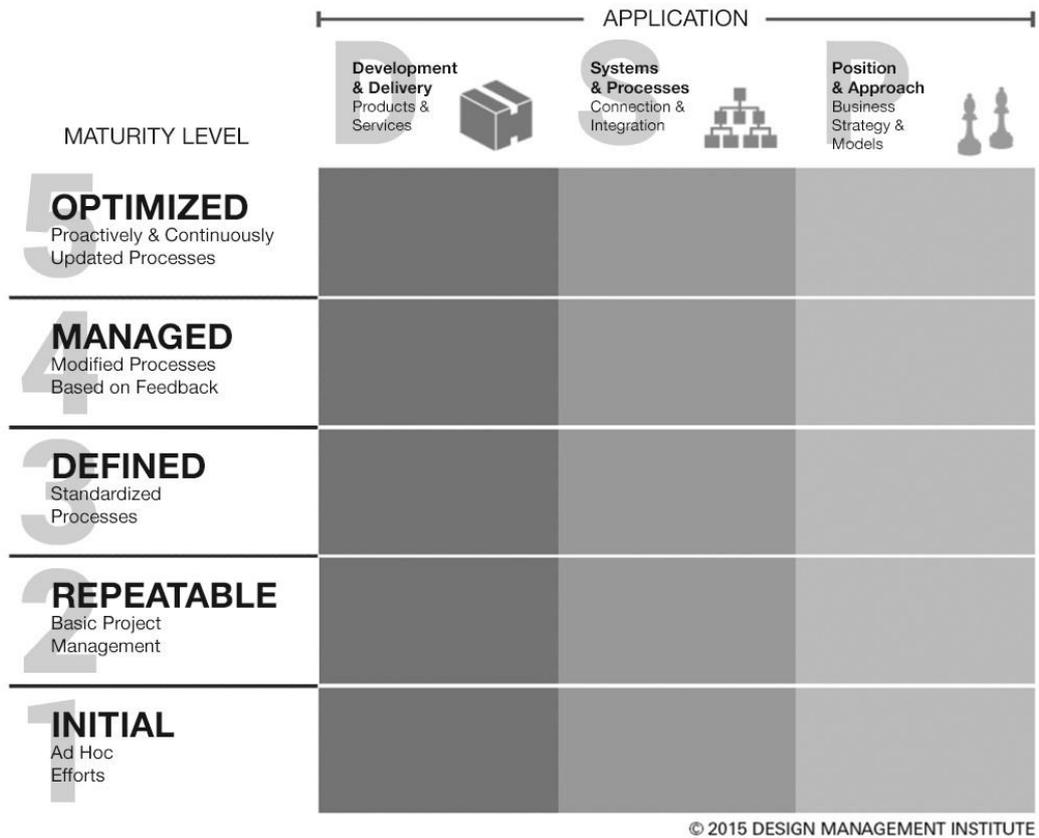
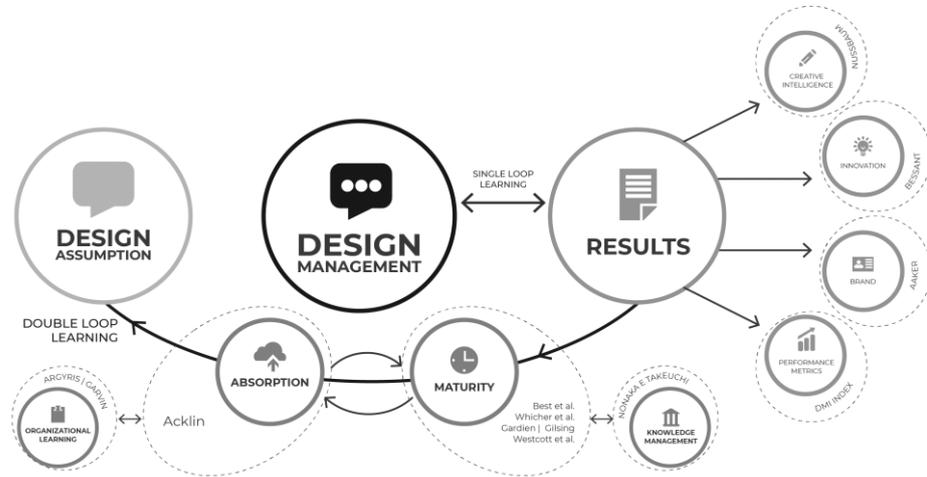


Figure 4. The Tools of Design Management: Design Maturity Grid. DMI website (DMI.org)

The measurement of design and the development of detailed models on process and maturity helps clearing fuzzy points of research and application of DM. At the same time, it opens research paths to deepen understanding of the impact of design on organizations such as studies on design absorption capabilities (Acklin, 2013; Ravello, Wolff and Capra, 2017; Ravello and Wolff, 2018) design maturity levels and design knowledge.

Wolff, Capra, Dutra and Borja de Mozota (2016) understand design as double loop process within a company, where the experience of inserting design can lead to better design absorption and then to higher maturity level. This double loop movement could, therefore, change design assumptions of the organization, changing cultural aspects and procedures, such as design management itself, as figure 5 shows.

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**Figure 5. Double Loop Design Management Model (Wolff et al., 2016).**

Also, a perspective of design as a double loop design management model comes to understand how design assumptions can be fundamental to design as well as how experiencing design can be transforming for an organization. New perspectives that arise new research possibilities, and a new research cycle on DM.

#### 4. CRITICAL SUMMARY

If we summarize this literature review, it shows:

**A representation of Design Management and design leadership.** The researchers Johansson and Woodilla conducted a study, which aligns with the results of our literature review. They represent the DM territory on two axes (on a vertical axis, change and regulation, and on a horizontal axis, objectivism and subjectivism). On this map, DM fits more into the functionalist paradigm (objectivism and regulation), and more rarely in the quadrants of radical humanist paradigm close to design leadership (subjectivism and change): “A functionalist center of gravity makes it difficult or even impossible to embrace the paradoxical and ambiguous aspects of praxis-based design knowledge. Design Management proclaims design but in such a way that the design characteristics cannot be seen.” (Johansson and Woodilla, 2011).

This overrepresentation of the territory of functionalist DM explains the difficulty of DM in a design perspective.

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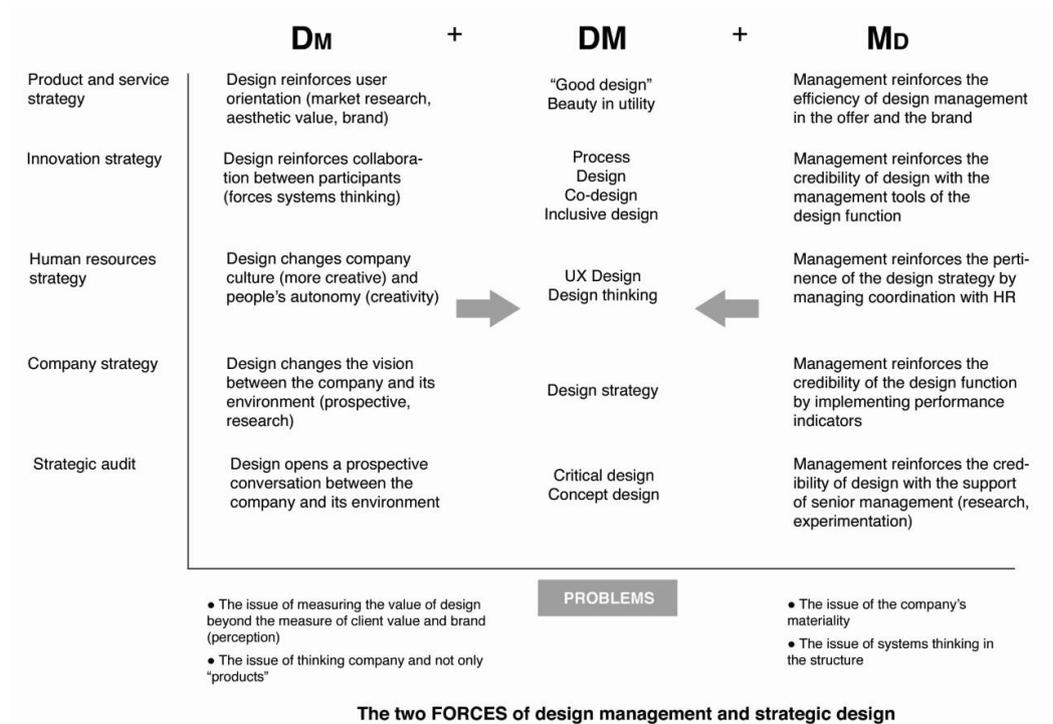
But the recent trends in management, the coming back of entrepreneurial spirit, new designers-entrepreneurs (Airbnb), and the issues of work transformation, of companies' social responsibility, and the blurry boundaries of industries are most likely going to balance this representation. A vision of non-hierarchical design leadership based on the radical humanist paradigm is possible: the "power of design over the situation" according to a theory by C.K. Follett, of critical design. Another idea would be to bring Design Management research and critical management networks closer together.

### **The Two Forces of Design Management Dynamics: M-d vs. D-m (Figure 6)**

The force of Management toward design (M to d): Management reinforces the credibility of design with tools for managing the design function. It reinforces the credibility of the design function with the implementation of performance indicators and with its support and space for experimentation. Of course, this means that design has to follow basic management rules, but ultimately it helps designers be respected and create the "design reflex" within all stakeholders.

The force of Design in management (D to m): New design disciplines emerge as problems in society and technological or sociocultural changes appear. These new disciplines are representations of our future world; they form a space for innovative systems, and thus help companies see the changes to be organized. As a result, design reinforces the conversation between a company and its environment. And, through DM, it is integrated in the tools of strategic external environment diagnosis (SWOT or PESTEL, tools widened to functional, cultural, aesthetic, sensorial, emotional, experiential, and environmental dimensions). But design also reinforces customer orientation, collaboration between participants, the creative aspect of corporate culture, and the autonomy of the participants (Borja de Mozota, 2002a).

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**Figure 6. The Two Forces of Design Management.**

**Change Management and Design Management.** Which leads us to the following question: since strategic changes in design science and management science come from environment transformations and since Design Management accompanies change in companies facing these transformations, it would be interesting in the future to check whether there is a consistency by time period between the trends of change as seen from the side of design science and from the side of management science; and, if so, whether we can prove there is a correlation between good management and good design.

## 5. CONCLUSION: IDEAS FOR THE FUTURE

### The future market of the design industry.

A British prospective study (Cooper, 2020) shows that design agencies are looking for models creating value and increasing the credibility of their profession. They also have to face new competitors, the newcomers in their industry that are strategy consultants. Which leads us to suggest:

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- a development of Design Management education in design school programs, and not just as a specialty at the master's level, but as a mandatory block to manage one's career and better understand the stakes of client companies;
- a development of studies on the tools to measure the value of design, which would very much benefit the quality of the relationship between the two interdisciplinary fields. The value-measuring models (Designence™, DMI, DME Award) exist; so why are designers still as reticent to use them in their professional practice? Since this question of value is the key issue differentiating design from Design Management.

### **Design Management research closer to field research**

Design Management researchers would be wise to look into the question of tensions and synergies between design and management, and to develop reflexivity over the situation of a designer arriving into a company—this would reinforce the efficiency of educational case studies to teach Design Management since they too often limit themselves to success stories which are difficult to transpose out of their own context—by promoting, for example, the observation of innovation project teams with tripartite students or in “third place” innovation spaces. What is the designer's specificity? Can we document reality and move away from the designer in a “creative's” posture in business science?

### **Silent Management vs. Silent Design**

It is very surprising to notice that designers who all have project management and process management skills are so unlikely to talk about these DM skills in their practice. To the concept of “silent design” highlighted by Dumas and Mintzberg, managers designing without knowing has to be compared to the concept of “silent management.”: designers managing without knowing.

By thinking of their design project with empathy for the “user customer” together with the “manager customer,” designers would be more able to express their value as managers are anxious also to improve well-being at work or to create a better world. In other words, to talk simply, of the “value of design for the company,” on top of value for the customer and value for the employee. Because companies have a mission, a strategic vision, and portfolios, but they are also complex human systems in which the designer's ability to observe, coordinate, visualize, simplify, and make something coherent are actually very useful.

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Along with this thread, understanding design assumptions in organizations can lead to better integrate design as culture. As much as an organization knows itself in the design area, better it can experience design full potential.

### **A few research leads**

Design Management research has not entered mainstream research in management science. A complementary analysis based on DM doctoral theses and on research journals would be welcome since this would show that design remains, for researchers in management or engineering science, an amusing territory to look at through emotion, creativity, material, or form, but not yet as a pertinent theory.

On the other side, design science understands the necessity of the DM function to regulate the power of design in the company structure, and the necessity of design leadership to work on disruptive or prospective innovation, but it often ignores organizational changes induced by a design strategy.

Design leadership too often wants to be a critic of classic-hierarchic management, by “silos,” carrying a discourse for a more open, creative, empathic, fluid, and autonomous company’s culture, but this is also the goal of the most efficient companies.

### **“Materiality” and aesthetics in management**

Management science neglects the role of aesthetics in understanding what happens when one organizes (Kimbell, 2011). Design forces executives and managers to worry about the concrete, about the “materiality” of the company. The entrepreneur’s posture is also very close to that of the designer; an entrepreneur is and thinks like a designer: “The entrepreneur designs their company” and shapes it. What is happening right now around the buzz of design thinking methods, which are developing changes in our lives, our hospitals or our cities and our companies, is probably going to infuse a theoretic domain on aesthetics in management different from the concept of Art Firm (Guillet de Monthoux, 2006). A theory of Design Management as design turned toward a person’s well-being, just as good management would be.

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