Preface

Since my graduation as a designer in 1999, I have had a growing interest in the way *design*, as a creative activity, helps people envision the *future*, a fictional terrain. Nevertheless, it was after several years working as a design consultant that I realized exploring the future is a difficult task to undertake. It happened during a workshop that I organized, in Palmira, to support innovation for small businesses, which are essential for the development of this underprivileged town in Colombia. As part of the icebreaker for the workgroup, I asked several questions to the business owners about their future, with the intent to identify their desires and act accordingly. After an awkward silence and several attempts to rephrase the questions, one of the participants said, *"you know Ricardo, we don't have a future here."* This was an unexpected answer for me, as a designer who is used to dealing with tomorrow.

This was not the only time I found this lack of a sense of destination. Years later, when I led the National Design Program of the Ministry of Commerce, Industry, and Tourism of Colombia, I worked with a substantial number of small businesses. As part of this duty, I realized that although they are firmly connected with the future as they seek to leave a legacy to their families and communities, they are stuck in the present because they must solve obstacles to survive now. Therefore, it became apparent to me that thinking about the future might prove problematic for these smaller players. As a result of the lack of skills for thinking ahead, these small enterprises have fewer possibilities to discover opportunities for change and thus create new ideas that will allow them not just to survive, but also to have a positive impact on society.

Looking for inspiration, I found that designers who work in the automotive industry already have a long tradition of thinking ahead through the making of *concept cars*. In these practices, *design*, as a visionary activity with strong emphasis on communication, and the *future*, as a speculative space, come together. Considering this inspiration, in this inquiry, I would like to democratize this design practice to support smaller players, boosting their capabilities for thinking ahead as key social actors who can change our society as they work towards a better future, which is socially and ecologically desirable, just, and sustainable.

Introduction

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Introduction

1. Introduction

This thesis focuses on the confluence of *futures studies* with *design* and the way this blend can serve *small- and medium-sized enterprises*, from now on referred to as *SMEs*. This chapter sets out the domain of this study –the intersection of these two fields–, introduces the problem, and outlines the purposes of this inquiry. It ends with a reading guide.

For the last three decades, we have known that organizations need to reinvent themselves, not only to deal with the pressures of competition but above all else to lead society towards a sustainable future: a future where communities can meet their demands, in view of the limitations of our planet, without compromising the needs of future generations (The World Commission on Environment and Development, 1987), but today it is even more important.

However, looking at the future is a difficult task, especially because enterprises are tied to the limiting and restrictive present with all its problems, instead of to the future with all its opportunities. To discover these opportunities, enterprises have several techniques known as *futures studies*, which help them in "thinking, mapping, and influencing the future" (Hines, 2016). Along these explorations, they set images of the future to work backward defining a path and thereby guide their actions in the present. One such technique is *scenario thinking*, which uses an examination of the world to come to create strategies for innovation (Wright & Cairns, 2011). Although these techniques have been used successfully by many corporations, they require difficult and resource-intensive activities, and the results they generate are often complicated and designed for specialized audiences. This makes them useful for large enterprises, but not for SMEs.

SMEs are defined as organizations employing fewer than 250 people and with an annual turnover of less than EUR 50 million (European Commission, 2003). They represent the vast majority of the global productive sector, giving jobs to two-thirds of the world's population (United Nations Environment Programme, 2003). SMEs are managed "based on intuition, emotions, and the will to succeed" with the firm commitment to make a difference (De Lille, 2014). The size and flat structure of these organizations ensure employees have easy access to the owners –the decision makers–, creating an informal culture with close relations among members and with users (Augustine, Bhasi, & Madhu, 2012). Therefore, SMEs can speed up the decision-making resulting in flexible and fast innovation procedures (De Lille, 2014). Generally, SMEs representatives "view its size as a competitive advantage" (Hammok, 2015) that makes them able to navigate towards the future more smoothly.

An example of such an SME is Sellarte, a Colombian family business that employs 47 people to produce and sell raincoats (see Figure 1-1) to a large market. While the company is growing steadily, it is unprepared for what will happen when the free-trade agreement between Colombia and China, which is a game changer in this industry, is finalized. The owner urgently needs ideas for the next years, but short-term issues consume all the company's resources as it searches for better suppliers, trains its employees, and improves the factory.

Figure 1-1. Picture of a raincoat from the Sellarte' portfolio. Source: Sellarte web page.

Even though SMEs urgently need to envision the future, as Sellarte exemplifies, they have lagged behind in applying futures techniques. This is mainly due to the inadequacies of the techniques mentioned above, which do not fit these enterprises' distinctive characteristics: informal, emotional, and flexible structures, and lack of sufficient skills and resources. The absence of simplified futures techniques impedes innovation (van der Duin, 2007) and thus their effective contribution to achieving the goals of a sustainable future.

However, there might be an alternative better suited to the characteristics of these smaller players: the *design approach,* which uses a particular way of envisioning the future, focusing on people and their experiences, translating abstract visions into tangible artefacts. Some of the futures techniques that use the design approach are new and come from academia and freelancers, such as *critical design* and *design fiction*, while others amount to long-standing practice in the automotive industry, such as *concept cars*. The first, *critical design*, "uses speculative design proposals to challenge narrow assumptions, preconceptions, and givens about the role products play in everyday life" (Dunne & Raby, 2013). It has been developed in academia, as the Design Interactions program at Royal College of Art, where designers, such as Anthony Dunne and Fiona Raby, deliver unconventional artifacts to open up the discussion about the social implications of new technology. The second, *design fiction*, is a technique to develop "micro futures-studies [that focus] on the everyday life, its short-term evolutions, and the standard objects or services that might fill these possible futures" (Girardin, 2015). It has been explored by design agencies, as the Near Future Laboratory, an atelier that develops fictional objects, such as magazines and product catalogues, through workshops with clients, where they ask questions about the application of future technologies and its strategic applications. The third, *concept cars*, is a well-known design practice used extensively in the automotive industry for exploring the future and thus innovating. Figure 1-2 shows the example of the BMW GINA concept car.

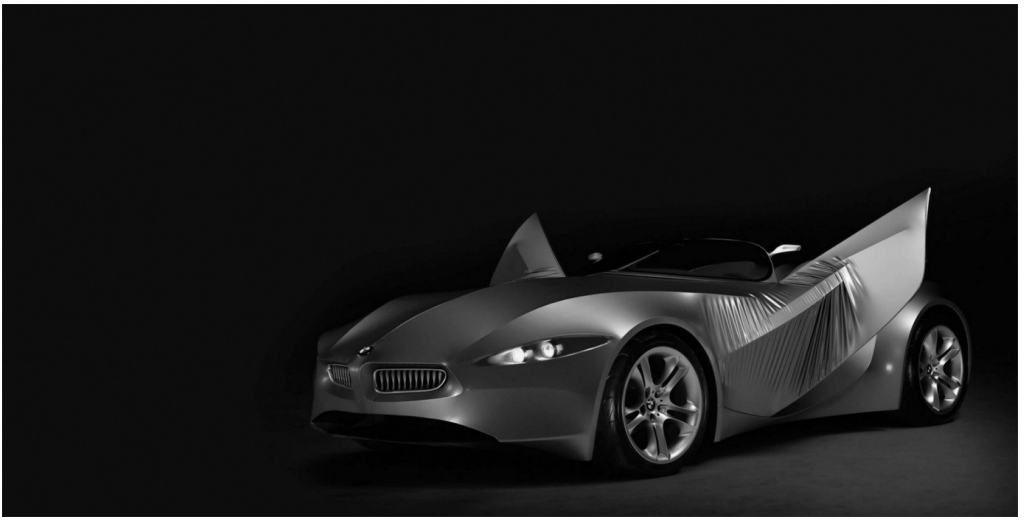


Figure 1-2 Picture of the prototype of the BMW GINA (Geometry and functions In 'N' Adaptations) 2001, a sports concept car entirely covered with a light fabric skin (Squatriglia, 2008). Source: BMW web page.

Although the futures techniques that use the design approach and their results seem closer to the management style, needs, and resources of SMEs, there is no particular technique for exploring the future of these firms. There is no technique, for instance, that helps Sellarte make a *concept raincoat* to envision the future and thus map opportunities, and inspire the design of solutions to face their Chinese competitors.

The aim of this inquiry, then, is to bring the benefits of applying these futures techniques –from academia, freelancers, and the automotive industry– as a design approach to supporting innovation in SMEs.

This aim leads us to define the following *research questions*: the inquiry first focuses on the current situation, the different techniques to envision the future, to study the research questions:

A. *What are the main activities of the futures techniques used in practice?*

B. *(How well) do these techniques fit SMEs?*

After that, the research concentrates on the design approach. First, exploring the prevailing practice, of how automotive corporations use concept cars as a futures technique in the context of innovation, to investigate these research questions:

C. *What are concept cars?*

D. *How are they used?*

E. *What value do they bring?*

Second, the inquiry explores other industries, in which the notion of concept cars has been extended to concept products and services, and rechristen them *vision concepts*.

It also compares vision concepts with other design-led futures techniques, such as critical design and design fiction. This exploration seeks to answer the following research question:

F. *What design-led futures techniques are used outside the automotive industry?*

After this exploration, the inquiry consolidates the insights drawn from all these design-led futures techniques, inside and outside the automotive industry, to help develop a futures technique for SMEs. This consolidation leads to the *design question*:

G. *How can SMEs make use of vision concepts to anticipate the future?*

In view of the guidelines of the ID·Studio·Lab, the design research community where this research is developed, the answer will take the form of a technique that improves the design practice. It will help designers and SME representatives make and share vision concepts to support innovation. In the end, the inquiry evaluates the use of the technique with SMEs, according to the main research question:

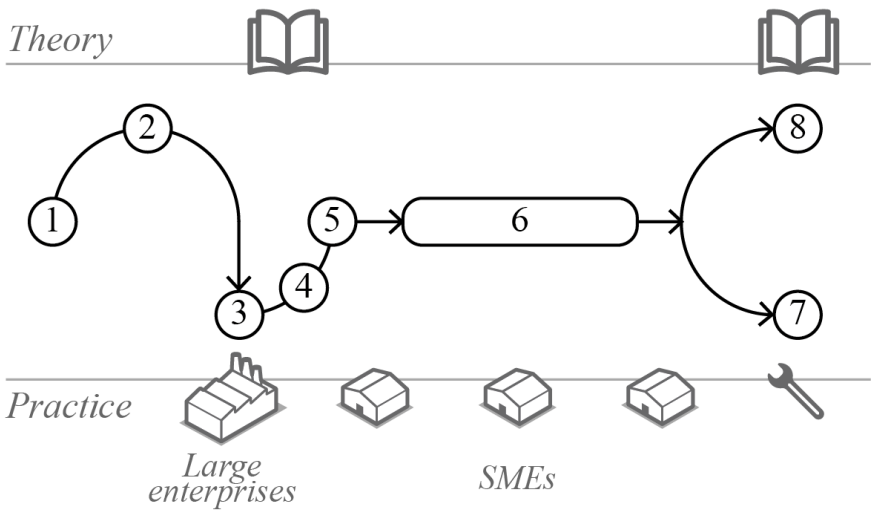
H. *What are the benefits and limitations of applying vision concepts for SMEs?*

To address both the design question and the research questions, we selected a *research-through-design approach*. This approach helps (design) researchers deal with these two kind of questions by encouraging them to iteratively build and test prototypes of products, services, or techniques, which will lead them to confront issues while developing knowledge (Stappers, 2007). An example that illustrates this approach, introduced by Stappers and Giaccardi (2017), is the Wright brothers. They made several prototypes, including a wind tunnel, a launching catapult, and an airplane itself, to develop the first successful airplane, along with the theory of propellers and a protocol of human-controlled powered flight. Accordingly, research-through-design approach can uncover new knowledge by making.

This investigation addresses a practical problem for SMEs, which have usually been neglected by design, and contributes to the body of knowledge on futures studies and design from a novel standpoint. When focusing on the problem, this inquiry offers a technique that takes advantage of the strengths of design to support SMEs in increasing their futures-thinking skills and thus their innovation capabilities. In the process, we have recognized a well-established design practice in automotive corporations, which has not been previously studied as a futures technique. Moreover, in trying to democratize this design practice for SMEs, we gained insights into the benefits of this way of thinking/making about the future for smaller players in a more restrictive context.

Reading guide

In view of the research approach and the contributions described above, we break this inquiry down into eight chapters (see Figure 1-3). The inquiry moves gradually from large enterprises to SMEs along to the theory and practice poles. Each chapter builds on either theory or practice and is the basis for the following one. It ends with a contribution to both: a technique for the practitioners (Chapter 7) and a reflection for the academics (Chapter 8).



1. Introduction
2. Futures techniques
3. Concept cars as a design-led futures technique for automotive corporations
4. Design-led futures techniques used outside the automotive industry
5. Development of a design-led futures technique for SMEs: DIVE
6. Evaluation of DIVE with SMEs
7. Application of DIVE 1.0 in practice: recommendations and considerations
8. General discussion

Figure 1-3. Blueprint of the inquiry. Source: the author.

Chapter 1 consists of this introduction. *Chapter 2,* which follows the research questions A and B, draws on futures studies and the design literature to identify the main components of the futures techniques used in practice and the ones that best suit SMEs. After discovering the opportunity to use the design approach to envision the future for SMEs, the next two chapters make use of empirical explorations to understand the techniques that take this approach. *Chapter 3* attends the research questions C, D, and E, discussing *concept cars* as one of these techniques in the

automotive industry, and *Chapter 4* proposes *vision concepts*, such as concept cars, products, and services, in other industries. This chapter also explores other design-led futures techniques in different industries to answer research question F. *Chapter 5* describes the development of DIVE, a technique for applying vision concepts for SMEs, including two iterations with enterprises. This chapter addresses design question G. *Chapter 6* presents the test of DIVE through five cases with SMEs providing an overview of the cases and the lessons from each one. Incorporating these lessons in the final two chapters, *Chapter 7* introduces DIVE 1.0, the technique that results from this inquiry. *Chapter 8* then answers the main research question (H), describing the benefits and limitations of applying vision concepts to boost SMEs' innovation capability. It also comprises a reflection on the research's contribution to the state of the art and illuminates its value for design practice. It ends with some ideas for further research.

This thesis has three different audiences:

- *Design researchers* who focus on futures studies and design. This thesis provides insights into the way practitioners have applied concept cars (Chapter 3), and also vision concepts and other design-led futures techniques (Chapter 4) for innovation. The dataset (Chapter 6) and the proposed technique (Chapter 5 and 7) can be used as starting points for further studies that involve SMEs or other smaller players, such as communities or individuals. Chapter 8 condenses the lessons from the application of this technique with SMEs.
- *SMEs representatives*. This dissertation offers a step-by-step guide to apply vision concepts as a design approach for exploring and communicating the future in SMEs (Chapter 5 and 7). Also, the cases presented in Chapter 6 show how other enterprises have developed these explorations.
- *Designers* and *design students* who are (interested in) working with smaller players. They will have access to all the information on the proposed technique in Chapter 6, which offers guidance to facilitate these exercises with smaller players. More importantly, they will find various considerations of how to work with SMEs in this type of future-oriented research (Chapter 7).