

WELCOME

This book is for anyone with a passion for innovating. Anyone who creates new products, services, concepts or interventions and who wants to effectively apply a different and new approach of thinking and doing while innovating; a designerly approach. This book is by innovators for innovators. Innovators are passionate and claim to have the best and most fun job there is. That is why innovators love to talk about activities, experiences and the challenges they come across. The rich stories of innovators about the application of design thinking in their innovation practice form the backbone of this book.

To create this book, we interviewed a wide range of innovators; product designers and R&D-managers, entrepreneurs and innovation consultants, market researchers and innovation managers. While making sense of the data, we found out that the way innovators apply design thinking is inseparable from the context in which they operate. We found commonalities in how professionals in comparable practices apply design thinking to come up with successful innovations. This sense-making process led us to construct four images of design thinking. An image of design thinking consists of the innovator's context, the scope of the innovation project as well as the innovator's role, responsibility and vision.

In short, an image provides a view on the world of innovation, that helps 'reading' the situation. This way of framing the context, hopefully, provides insights and inspiration to nourish the endless passion even more by adding clarity to the innovator's actions.

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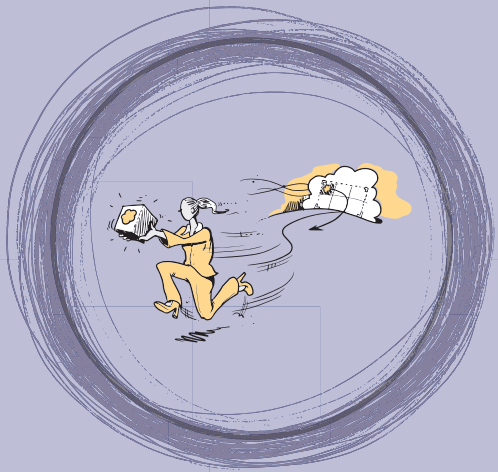
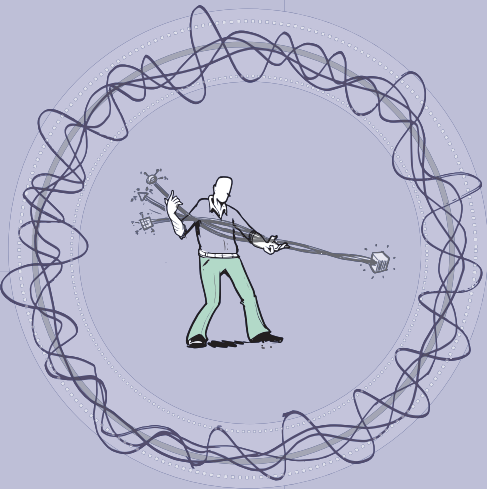
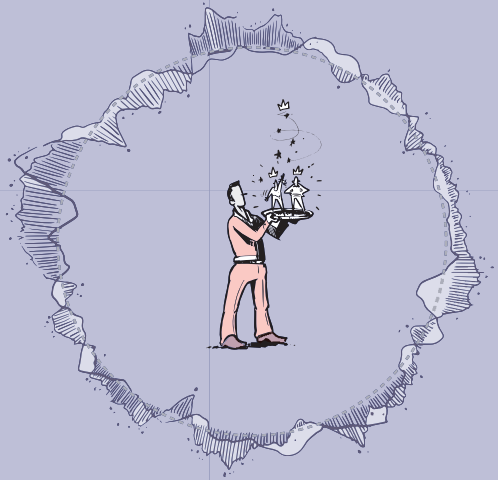
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DEMYSTIFYING DESIGN THINKING

DESIGN AND DESIGN THINKING

Great designers are honoured worldwide for their skills. Consider, for instance, Rem Koolhaas, the controversial architect, Philippe Starck, whose products include toothbrushes, buildings and interior, Steve Jobs, the high-impact innovator, and Amesh Kapoor, creator of astonishing artworks. These designers seem to have unique skills. They are creative powerhouses who can deal with ambiguity, uncertainty and complexity – and create things that did not exist before. Designers are trained, but their unique talent is also an intuitive process, learned through experience or gained by natural ability. Design researchers have tried to capture this artistry of design for many years. Still, there is a mystique that surrounds designers' ability to create something out of nothing.

Design thinking – a term that has seen an increase in popularity in recent years – originates in the literature of Design Methodology. Design research emerged as a recognisable field in the 1960s. Design thinking refers to Bruce Archer's concept that:

'...there exists a designerly way of thinking and communicating that is both different from scientific and scholarly ways of thinking

and communicating, and as powerful as scientific and scholarly methods of enquiry when applied to its own kinds of problems.'

(Bruce Archer, 1979 cited by Nigel Cross in *Designerly Ways of Knowing*, 2007)

Archer (1979) argues that design activity operates through modelling. Where natural language is the vehicle for the humanities and notation for science, design is characterised by the language of modelling. He explains that modelling is found, in various forms, as the vehicle for all sorts of activities, such as navigating, surgery, dancing, and even crossing a busy road. Since then, research has focused on design cognition, processes and collaboration and how designers exhibit design expertise and activity.

In the last decade, interest in design thinking has proliferated in fields beyond product design and architecture. Earlier writings were all written with a specific goal in mind (simplifying, explaining, describing) or from a certain perspective (design, business, management). We have seen the boundaries of design being extended from designing products to addressing and solving societal issues.

'Now, however, rather than asking designers to make an already developed idea more attractive to consumers, companies are asking them to create ideas that better meet consumers' needs and desires. The former role is tactical, and results in limited value creation; the latter is strategic, and leads to dramatic new forms of value.'

(Tim Brown, *Change by Design*, 2009)

An example of this trend is the popular book *Change by Design* by Tim Brown, designer and CEO of IDEO, the world's largest design agency. In this book, Brown describes design as a major lever for change to drive innovation and growth for the world's leading businesses and the government, education, healthcare and social sectors. Brown provides insights into the application areas of design thinking and shows what design tools and techniques can be applied to solve abstract and multifaceted problems with a user-centred approach. He states that you do not have to be a designer to benefit from design thinking.

'Design thinking begins with skills designers have learned over many decades in their quest to match human needs with available technical resources within the practical constraints of business. Design thinking takes the next step, which is to put these tools into the hands of people who may never have thought of themselves as designers and apply them to a vastly greater range of problems.'

(Tim Brown, *Change by Design*, 2009)

At around the same time, management sciences began to take a growing interest in the topic of design thinking. Business was hindered by an overload of analytical thinking that stemmed from companies' obsessive reliance on efficiency and predictability. Rational and analytical thinking – the main paradigm in business management, a remnant from our industrial era – is no longer enough to guarantee competitiveness these days. This trend is exemplified by the book *The Design of Business* by Roger Martin, business consultant, management professor and dean at Rotman School of Management. In this book, Martin states that we need to →

usher in new ways of thinking in boardrooms in order to come up with breakthrough innovations. Martin explains that design thinking is the next competitive advantage for business – a way of thinking that introduces integrated views and thinking in alternative scenarios. However, he also states that this new way of doing business is too important to be left to designers alone.

‘... even in the bowels of the most reliability-oriented company you can work to develop your own design-thinking skills and individually produce more valid outcomes. And you can learn how to work more effectively with non-design thinkers in your organizations, rather than engaging in counterproductive battles that result in standoffs, hard feelings, and inaction. Both developing your own design-thinking skills and learning how to deal more productively with colleagues who are analytical thinkers and intuitive thinkers will help you be a capable and successful design-thinking CEO someday.’

(Roger Martin, *The Design of Business*, 2009)

These two different perspectives, both with a distinct background, describe design thinking in particular ways. Design thinking burgeoned after the publication of these books. Since then, many more writings have been published on the subject. All these books ride the waves of the times, all from their own background, experience and interpretations. Design has definitely broken out of design schools and is building on its new potential.

Nowadays, there are many different ideas and views on design thinking. Although there is no consensus on the actual definition of design thinking in the literature, there is agreement on its value for different fields. The ability to apply a design perspective is being recognised as increasingly valuable and important in traditionally non-designerly fields and disciplines such as business management, education, anthropology, psychology, IT and engineering. Reading the existing body of knowledge, we understand that although design thinking involves many elements, they never seem exclusive, but rather as pieces of a puzzle. In applying design thinking in practice this may result in either very general principles, such as ‘having a user-centred approach’, or very specific principles, such as ‘visualise your notes while creating new insights’. For a holistic view on design thinking in innovation, other aspects apart from actual design activities have to be considered. We identified and used these other aspects to frame the ‘images’.

IMAGES OF DESIGN THINKING

Earlier authors and their writings reveal different facets of the notion of design thinking. Since their trains of thought do not align, we decided to ask practitioners what the value of design thinking is in their innovation practice. Our respondents have had years of hands-on experience with applying a design approach in innovating within the companies and organisations they work for and with. We were interested in finding more practical principles behind using design thinking in addressing and handling specific situations characteristic to innovation. The stories in this book originate from interviews with these 30 innovators. For these interviews, we used a card deck for inspiration. The deck consisted of 48 design thinking activities derived from the literature. We asked the practitioners what they thought was unique about design thinking and how they applied it in their daily practice. These parts of the interviews, where innovators explain how they apply a designerly approach in their daily innovation practice, are a large part of the book.

The richness of the stories they shared during the interviews and the structures that emerged when we reread them took us by surprise. We were struck by the diversity of their challenges and contexts and the richness in how they applied design thinking – and this is what inspired us to write this book. We ourselves slowly learned the nuances of applying one strategy over another. In the images, we seek to capture this logic.

The *images of design thinking* presented in this book are the result of our challenge of dealing with the complex role of design thinking in innovation. The basic premise of this book is that there are multiple views – or at least that multiple views can help to make abstract notions clear and applicable. Looking at the broad field of innovation, spanning from product or service design to business and strategy development, we tried to grasp the value that design can provide in innovation.

Through the stories of the practitioners we literally want to give a human face to design thinking in innovation. We present our innovators as real people sharing practical examples and stories of how they apply design thinking. Like any product use, the user experience of design thinking is influenced by the individual combination of the user and the context of interaction. All *images of design thinking* describe combinations of the role, responsibility and vision of the innovator, the innovator's context, both social and physical, and the scope of the innovation project. It is in these rich combinations that good designing can be addressed in a way that will appeal to those who recognise it and provide inspiration to those who want to become good innovators.





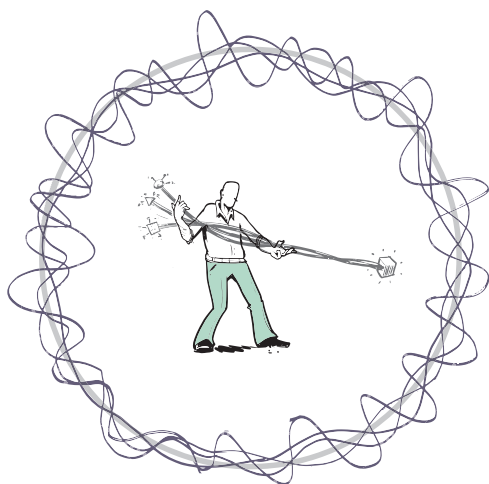
VALUE-DRIVEN INNOVATION

The first image is *value-driven innovation*. When you are practicing value-driven innovation you may work in a medium-sized or large company and are responsible for the planning and roadmap of the product or service portfolio. In such cases, you work together with the new business development team to develop a strategy to future-proof the company. Value-driven innovation is about balancing different values as they appear in the context of business. Innovation spans a holistic view, rising above all separate views.



EXPERIENCE-DRIVEN INNOVATION

The second image is *experience-driven innovation*. When you are practicing experience-driven innovation you may be responsible for the creation of mainly intangible experiences. In such cases, your job is to design and facilitate a process where people are invited to co-design the best user value. Experience-driven innovation is about the in-depth involvement of all the people who together shape an experience. The innovation can only exist when it is co-created and co-used with users.



PURPOSE-DRIVEN INNOVATION

The third image is *purpose-driven innovation*. When you are practicing purpose-driven innovation you may be responsible for the development of industrial products within a company. In such cases, you work with a multidisciplinary design team to design a product whose main success driver is providing value for the end user. Purpose-driven innovation is about the meaningful integration of all the knowledge bases, views and interests of different disciplines to serve a single purpose. The resulting innovation is a product with a heart.

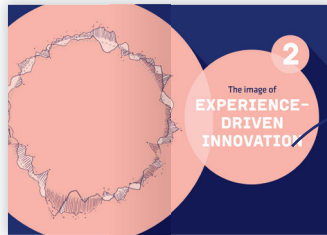
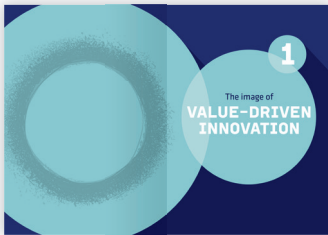
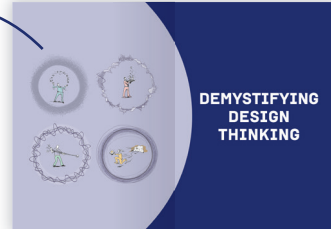


VISION-DRIVEN INNOVATION

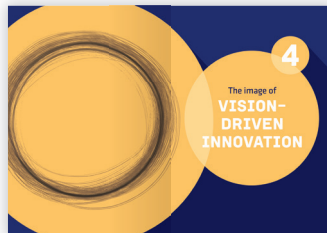
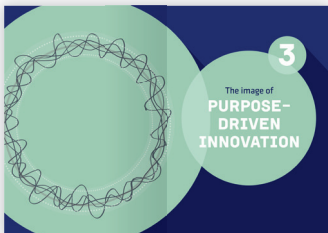
The fourth image is *vision-driven innovation*. When you are practicing vision-driven innovation you may be responsible for the creation of strategic propositions for future directions. In such cases, you partner up with a diverse group of experts to explore the world for new insights that will make a difference for both the world and the organisation. Vision-driven innovation is about innovation for the future. Such innovations explore future possibilities and produce sustainable business.

OUTLINE OF THE BOOK

The book has started with the part in which the authors explain the scope of the book.



The images of design driven innovation form the core of the book. The four images each have a different color code.



In the concluding part of the book, the authors reflect on the relations between the images and the differences and commonalities between the images.



OUTLINE OF EACH IMAGE

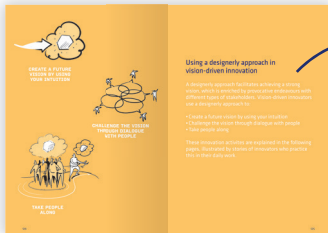
Each image is made up of the following components:

An image chapter starts with a general description of the innovators' role and innovation context.

The innovators are introduced, by showing their picture and biography on the second page.



In each image the innovators' view on the world is described and the challenge they are facing.



Each image chapter continues with a description of distinct innovation activities for which the innovators use design thinking. The authors constructed the innovation activities based on the stories of the innovators.

Each activity is explained in general



The description of each innovation activity is followed by one-pagers in which innovators explain why and how they execute the innovation activity. By comparing these rich descriptions one will notice the diversity as well as the similarity between the stories of the innovators.

ABOUT US

As professionals in design and innovation, we share a passion for the field, the people who work in it and what moves them. We have different levels of experience (5, 15 and 25 years) and were educated in different eras (1980s, 90s and 00s). We work in different roles and our perspectives cover the scientific, educational and practical.

We're enthusiastic about our field because it's driven by passionate people who create tomorrow's world. Interviewing these innovators has been a joyful enterprise. Our innate curiosity about understanding the world inspired us to research design thinking. During our discussions, our views reflected our different perspectives and ages. These sessions were inspiring, sometimes heavy, but always yielded better insights – and kept us going on the journey that resulted in this book.



Rianne C. Valkenburg (1966)

Innovation is my way of life: I change contexts often, explore new worlds, and initiate for unexpected

encounters to be constantly surprised. My work in innovation has evolved along two tracks. First, I always balance on the crossroads of (scientific and applied) research and business practice. Second, I always seek to be where innovation itself is changing. In recent years, I've focused on innovations that can make a change; using (design) expertise to tackle the wicked challenges of society.

The biggest insight I gained while writing this book was that I've moved around in different images, intuitively choosing the best approaches, but most of the time I haven't been able to explicitly explain why. The four images help me greatly to realise what I'm doing, but also enable me to connect better with people in other images. This was a real "wow" moment.

Currently, I work as a (part-time) professor of Designerly Innovation at The Hague University of Applied Sciences, where my research team focuses on spurring innovation by means of a designerly way of thinking and doing. I also co-founded LightHouse, affiliated with the Eindhoven University of Technology. At LightHouse, I initiate and facilitate knowledge-intensive projects to enable municipalities and organisations to apply smart city solutions and make the most of the contemporary disruptive technological possibilities. I hold a master's degree in Industrial Design Engineering from Delft University of Technology (1992), and a PhD on the reflective practice of product design teams (2000).

**Janneke Sluijs (1986)**

I've fallen in love with facilitating creative processes in innovation projects because they bring passionate

people together in a productive way. This gives me great joy and satisfaction. I believe we're living in an exciting era. However, the world of tomorrow needs crossover innovation so that it can be a sustainable home for all the people living in it. I see grand challenges ahead and take pride in preparing design students to become innovators.

The biggest insight I gained while writing this book concerns the abilities of design-driven innovators and the nuances of applying this approach in different contexts. I'll harness this insight in cultivating curiosity and sensitivity in innovators in training and in practice. I also hope to contribute to education (not only in design) so that students in every discipline can become better co-creative active citizens of this world.

I currently work at The Hague University of Applied Sciences, where I teach in an international bachelor Industrial Design Engineering programme, which I've also helped to set up. I also conduct research in the field of design thinking.

I hold a bachelor's degree in Engineering (2009) and an MBA in Imagineering, Business Innovation from the Experience Perspective (2015).

**Maaike Kleinsmann (1976)**

Passionate people with diverse perspectives who are creating meaningful products and/or services

together fascinate me. Collaborations have always been the core of my work.

As a researcher, I've been involved in various innovation projects from the 2000s onwards. These projects vary from the development of a high-speed train to product-service systems for people suffering from dementia. My role in these projects has also differed greatly, from a lonely observer making sense of the effectiveness of collaborations to a team member actively involved in the development of products and services. Designing has always been the thread that joins all my projects together.

One of the biggest insights that I had while writing this book is that the designerly approach has a huge impact on innovation, but it certainly needs complementary approaches to make it happen.

Currently I'm an associate professor in design-driven innovation at the faculty of Industrial Design Engineering at Delft University of Technology. My research team concentrates on the role of design thinking in digital innovation, aiming to develop and test methods that equip industrial designers to innovate within a connected world – a world in which value is created not only by innovators, but also by everyday people like you and me.

I hold a master's degree in Industrial Design Engineering from Delft University of Technology (2000), and a PhD on collaborative design (2006).