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Quick Guide to Design Thinking

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The first volume in a new and ambitious international Danish Design Series is an authoritative look on design thinking

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Book

Key Sales Points

- Up-to-date models on research and method description
- Overview of the current debate on design thinking
- Short, inviting, innovative and accessible format

The point of departure for the book is the current and increasing popularity of design thinking across a growing number of industries and sectors. Design thinking has become the new buzzword in the business and management literature. It is described on the cover of *Harvard Business Review* as 'an approach to devise strategy and management change' and highlighted as a popular innovation method by a growing number of business analysist, as well as concultancy firms, that are including design thinking in their service portfolio.[1]

Design thinking and design doing are interrelated activities in design practice.

Due to this growing interest in design thinking, the value of design is increasingly widely recognised. However, the versions of design thinking that are currently being circulated in much of the management literature and by many consultancy firms are fairly simplistic, compared to the understanding that characterises both contemporary and historical professional design research and practice. Thus, the debate about the potential applicability and benefits of design thinking calls for greater nuance.

> An underlying assumption of this book is that it is not meaningful to speak of design thinking without also considering design practice. 'Design thinking' and 'design doing' are interrelated in the practical application of design thinking.[2] It is the highly productive exchanges between the design practitioners' thinking and doing and their simultaneously conceptualising and materialising capacity that give design thinking its unique character.

In a time when companies increasingly focus on creativity and innovation, design thinking can offer specific approaches that facilitate these transformative processes. In relation to the major challenges the world is currently facing, design thinking also offers a tool for reflecting on and redeveloping society in more socially and environmentally sustainable directions on different scales. Design thinking can help us transform our surroundings and, by extension, ourselves.

To paraphrase the pioneering design thinker Victor Papanek, design thinking manifested as materialised design is one of the most powerful tools at humanity's disposal. That requires us to use this tool thoughtfully and with compassion.[3]

From a general perspective, the practice of design, in principle, dates back to human beings' earliest interventions into their natural environment. Thus, all types of tools may be seen as manifestations of design.[14] From a disciplinary perspective, creating the new is associated with the design profession, which emerged with the advance of industrialisation and mass production in the mid 18th century. In this development, making went from a purely craft-based to a conceptualising activity aimed at shaping ideas and templates for things with a view to subsequent production. Thus, design came to be about form and design intentions.[15] Below, the general and the disciplinary design understandings are represented by quotes from early design thinkers.

'Everyone designs who devises courses of action aimed at changing existing situations into preferred ones.'

Herbert A. Simon, 1969.

'Design is 'the process of inventing physical things which display new physical order, organization, form in response to function. The ultimate object of design is form.'

Christopher Alexander, 1971.

Simon's and Alexander's statements represent two key positions that continue to define one of the main axes in the debate about the concept of design. This axis is also present, across positions and approaches, in reflections on what design thinking is and who is entitled to practise it.

The Nobel economist Herbert A. Simon famously wrote in 1969 that design is about devising a course of action aimed at 'changing existing situations into preferred ones'. In this sense, design is not the reserve of designers but can, in principle, be practiced by anyone.[16] In contrast to this broad notion, the architect and design theorist Christopher Alexander (1964) claims that 'the ultimate object of design is form'. In this sense, design is thus primarily associated with a profession of trained designers and architects.[17]

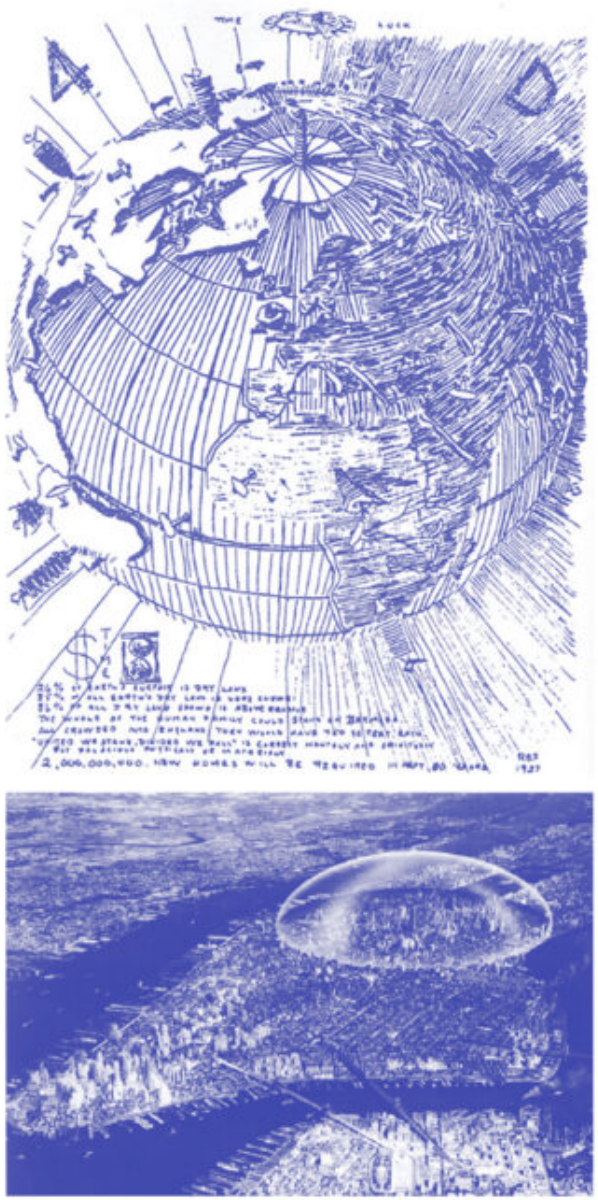
Design builds a bridge between what exists and the new that is yet to be developed. The design researcher Bryan Lawson describes the designer's mission as follows: "The designer has a prescriptive rather than descriptive job. Unlike scientists who describe how the world is, designers suggest how it might be."[18]

2.1.

Design and designerly thinking as a science of the artificial

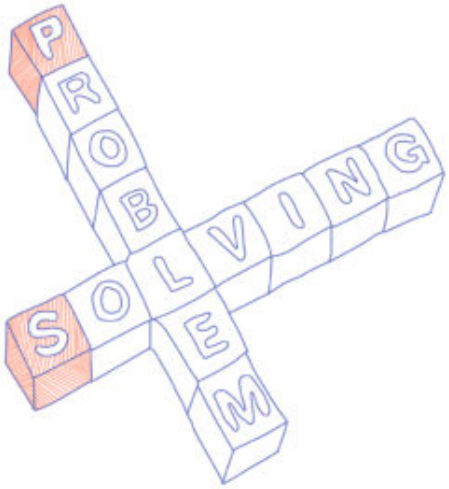
Historically, the discourse related to design and designerly thinking can be traced back to early reflections on designers' methods during the 1960s. The interest in design methods emerged in parallel with the major technological and scientific breakthroughs that were made during and just after the Second World War. A key factor was the invention of the computer and, closely associated with this breakthrough, new systems and complexity theories that seemed to address every conceivable aspect of the world – from the understanding of the human body as a self-organising system of signals to visions of artificial machine intelligence and robots with the potential to relieve human beings of a wide range of working tasks.

When everything is design. Buckminster Fuller's air ocean town plan diagram (1927) with an early comment on globalisation and the consequences of a maladaptive design development: 'United we stand, divided we fall.' Below: Fuller's sketch for a 'hemispherical dome' over Manhattan from 1962 with a two-mile diameter. The geodesic dome would weigh 80,000 tons, be constructed of five-ton sections and be assembled by helicopters over a period of three months. The dome structure itself was to be inhabitable. It was to act as a solar collector in winter and a heat shield in summer. The cost would be USD 200 million, but Fuller believed it would pay for itself by reducing the costs of air-conditioning, waste collection, snow removal and loss of earnings due to colds and other respiratory infections.



In extension of this point, he suggests that design develops through 'four orders of design', where each 'order' is a place for rethinking and reconceiving the nature of design, not categories of a fixed meaning. Each 'order', as Buchanan sees it, is a platform for design activity and contains potentials for design thinking. Although Buchanan's model is aimed at a professional context, he sees design thinking as a wider area of expertise with a potential in most settings and argues that the combination of different orders can contribute to innovative design thinking.[33]

Problem and solutions are interrelated. An important insight in design thinking studies is that designers typically conceptualise and understand a problem concurrently with formulating solution proposals. This sets design thinking apart from, for example, traditional project management approaches, which typically begin with efforts to understand the problem and then proceed to attempts to solve it. In design thinking, the idea is that it is only through attempts to concretise a solution that one truly understands the nature of the problem. For example, it is only by modelling the digital prototype of an app that developers can see what it needs to be able to do, and how it should function. Similarly, it is only by sketching and creating tangible prototypes of a 'user journey' through an airport terminal that one can understand what the user experience should be like.



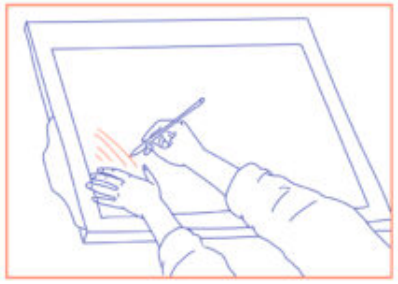
Rittel's and Buchanan's theories on design as a tool for solving complex problems are a key theme in the 'design and designerly thinking discourse' and have been further developed in several subsequent studies focusing on the problem-solving aspects of design. Here, the point that problem and solution are interrelated in design seems to constitute a key research focus. For example, Nigel Cross documents in recent studies that designers tend to understand a problem while they are formulating proposals for its solution. Thus, they often work with problem-solution pairs, rather than following a linear path from problem to solution.

The notion that designers think in terms of problem-solution pairs rather than a linear chain of arguments leading from problem to solution implies that designers do not dwell very long on the task of defining problems. Cross has even called designers 'ill-behaved problem solvers'. His studies, on the other hand, document that it is this very ability to be anti-authoritarian and to know when the problem formulation is sufficient that makes designers so adept at spotting patterns and translating complex briefs into meaningful solutions.[34] Donald Norman summarises a similar point in his 2013 essay 'Rethinking Design Thinking', where he states that 'designers often attempt to solve problems about which they know nothing. I have also come to believe that in such ignorance lies great power: The ability to ask stupid questions'.[35]

'Ill-behaved problem solvers'. Based on observation studies of designers, Nigel Cross concludes that designers tend to be slightly 'ill-behaved' in their approach to problem-solving. Competent designers, according to Cross, also typically seek to challenge both the problem and the most obvious solution rather than going with the first proposal that seems to fit the bill.

The second position views design as primarily an inquiry-based activity that explores a task or a problem in depth without necessarily arriving at a final, materialised proposal for a solution.

The inquiry-based approach often aims at creating platforms for the development of processes or change, where different actors, including non-designers, can be engaged over time, typically in the form of new design approaches, such as co-design or co-creation, which use a variety of methods aimed at facilitating co-creative processes that involve the participation of users, citizens or other external stakeholders.



Brief-driven or explorative. Historically, trained designers have focused primarily on designing a solution based on a brief with certain demand specifications. Traditionally, the design competence has thus been focused on solving a problem and fulfilling the requests outlined in the brief, largely associated with form and often situated at the latter stages of a decision-making process. New design genres, such as co-design or co-creation, include multiple process stages, from problem or idea to prototype to solution. These new genres also represent a more explorative approach to design thinking that does not necessarily result in a design product. Instead, the outcome of the process may be a new concept for a service, a vision or a strategy, which is not necessarily realised as form.

Design Ladder. The Danish Design Centre's so-called Design Ladder illustrates different ways of applying design and design thinking in companies and organisations. Level 2 represents the classic design approach with its focus on developing products and corporate identity programmes based on well-defined, often brief-based demand specifications. Levels 3 and 4 are characterised by more explorative approaches, where designers' mindset and methods are used, for example, to facilitate an organisation's innovation or strategic processes, but where it is not necessarily designers who engage in design thinking, and where the process is not necessarily realised as form or as a material or immaterial product.

The explorative approaches to design thinking often include users or 'non-designers' throughout the design process, from the initial idea to the finished product. Thus also in the initial, so-called 'fuzzy front end', to quote the term coined by the design theorists Liz Sanders and Pieter Jan Stappers.[46] This is where the design problem is defined and understood, and where the designer and the users together can 'rehearse the future', to borrow the design theorist Joachim Halse's term, by proposing and testing different solutions and then implementing and evaluating them.[47] One example might be the development and testing of new waste-sorting facilities for multi-storey residential buildings, where prototypes for separate bins and the waste-handling company's collection procedures are developed in collaboration with stake-holders as 'act-it-out prototypes' that take form in a dialogue with an imagined practice.[48]

Riding the coat-tails of the users. In user-driven design approaches, which are represented in participatory design or co-design, among other fields, the users are ideally included at every stage of the process, from the initial idea to the finished result. Unlike the classic approaches to design development, where the brief is typically defined by a client or conceived by the designer as an idea for solving a problem, user-driven approaches also engage the users in identifying or coming up with the problem to be addressed. One example might be a manufacturer of sports attire who wishes to explore unmet needs among extreme-sports athletes. In this case, the first stage of the process would typically consist of ethnographically oriented studies of the athletes, including their behaviour, values, equipment and ways of socialising. The process would include talks about what they might imagine could be different, for example improved activities or experiences. This exploration would typically consist of what-if scenarios: 'What if we did it this way? How would that affect the activity?' This approach thus examines both problems and possibilities in a collaborative process.

In the long run – and justifiably so – simplistic, easy-to-follow design thinking approaches risk criticism because they, naturally, fail to deliver as promised. That presents a challenge to the deep design professionalism that the academically anchored design thinking represents. It is important to be aware that design thinking is always followed by hard work when it comes to implementing the solutions: 'after the ecstasy, the laundry.' It takes major resources to carry out user-involving processes, and there are no quick fixes, contrary to the impression one might gain from IDEO's and some of Stanford University's versions of design thinking.

2.7.

Design and designerly thinking as a science of the imaginary

Recent design thinking studies speak of design thinking as a science of the imaginary. In this understanding, the idea is that design research only takes place through practice,[52] as the researcher develops proposals for new realities that are brought to life, for example, through prototypes, mock-ups and scenarios. This approach builds on those branches of design studies that are also called 'practice-based design research' or 'research through design' and which, in addition to requiring knowledge production, also contain an experimental or form-related practice.