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Case Study Paper

Timely and timeless framing of the new MINI Cooper



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This paper presents an exemplary case in the car industry: the design of the new MINI Cooper, released in 2001. Through a semi-structured interview with design expert Frank Stephenson and the use of secondary data, we examine how an expert designer considers time to design a car relevant across decades. We find that the framing of the new MINI Cooper integrates both timely and timeless aspects. In the process, Frank Stephenson draws values, frames and working principles from the present portfolio and competing products to create a succession of product generation.

We use this case to argue for the centrality of framing time when striving to create seminal, long-lasting designs. The study identifies ‘the framing of time’ as a main expertise in the car industry. Therefore, this paper answers scholars’ calls for more research on how outstanding designers work to consider time (Cross, 2004).

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Keywords: case study, framing, design expertise, automotive design, time

Thus far, design research has examined many elements of design expertise, including distinct design abilities, skills and competencies (Lawson & Dorst, 2009, pp. 98–111). Expertise is situated and domain-specific (Paton & Dorst, 2011) and is a product of what is important in a practice domain (Chase & Simon, 1973). Experts have been exposed to many examples of domain-specific problems and solutions, enabling them to

mentally stand back from the specifics of the accumulated examples and form more abstract conceptualisations pertinent to their domain of expertise. Experts are believed to be able to store and access information in larger

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cognitive 'chunks' than novices can and to recognise underlying principles, rather than focusing on the surface features of problems (Cross, 2004, p. 432).

Several scholars have shown that design expertise is strongly associated with framing (Cross, 2018; Lawson & Dorst, 2009; Lotz et al., 2014; Paton & Dorst, 2011). Although framing is a cornerstone of design reasoning, research on it has been limited (Borah, 2011), and there is a call for more studies on how design experts frame (Haase & Laursen, 2019).

Designers create frames through a reasoning process that allows them to develop a perspective from which to address design problems and design solutions (Dorst, 2011; Hey, Joyce, & Beckman, 2007; Pee, Dorst, & van der Bijl-Brouwer, 2015). The overall structure of a frame comprises four interconnected elements: 1) insight, 2) aspired value, 3) frame (a metaphor or a one-liner) and 4) working principles. *'A frame consists of a number of insights and aspired values that are connected to a set of working principles, often expressed as metaphors or one-liners'* (Haase & Laursen, 2019, p. 33).

In the literature, there are two main perspectives on frames based on their focus: the problem (problem frames) and the solution (solution frames). Research on *problem frames* examines how designers use frames to create a standpoint and perspective on design problems (Dorst, 2015, p. 55), allowing them to settle boundaries to navigate the complexity of ill-defined design problems. Dorst (2015, pp. 9–19) defined framing as an approach to handling ill-defined problems. Further research has shown that framing can also be used to structure or to present a problem (Laursen & Andersen, 2015; McDonnell, 2018). Research on *solution frames* (Stompff, Smulders, & Henze, 2016) examines how designers use frames to create possible solutions. Framing is used as a way of reasoning to structure a proposal as a 'working hypothesis' (Stompff et al., 2016, p. 210).

While there is a main *'distinction between frames concerning the design task (the problem) and frames concerning the solution(s)'* (Valkenburg, 2000, p. 132), recent research has studied the integration of problem frames and solution frames (Haase & Laursen, 2018).

Haase and Laursen (2019) defined meaning frames as an overall framework that encompasses the creation of problem frames and several solution frames and that has an operative purpose in designing the solution. Meaning frames enable designers and design teams to establish goals, values and the expected meaningfulness of a design solution. In the meaning-making process, designers create multiple solution frames, each addressing a specific factor of a design (e.g. interaction, experience, quality, etc.) and thus establishing the overall vision and the boundaries of the solution space and relevant criteria to

evaluate the design (Hey et al., 2007). These multiple solution frames are added, changed and refined throughout the process, but research has not provided details on how expert designers use them in practice. Design scholars have called for a deeper understanding of how expert designers (also called outstanding or exceptional designers) work (Ge, Leifer, & Shui, 2021).

In this paper, we examine the framing of expert designers. As previous studies have shown, expertise is anchored in a specific domain and is co-constructed with the context (cf. Csikszentmihalyi & Robinson, 2014; Sosniak, 2003). We interviewed an outstanding designer with domain-specific expertise, Frank Stephenson, who has worked with car design for more than three decades. Frank Stephenson has led the design of several seminal cars, such as the MINI Cooper and Fiat 500, has been a designer for Ferrari, McLaren and BMW and is recognised as an outstanding designer within the car industry. In this research, we study how Frank Stephenson used multiple solution frames for the redesign of the MINI Cooper. We focus on the expert reasoning that allowed Stephenson to establish the boundaries, clarify the evaluation criteria and establish a link between aspired values and specific working principles and design features.

The remainder of the paper is structured as follows. First, we review previous theories to build a theoretical framework for understanding time and the strategic framing of time. Second, we use this framework to examine an exemplary case: the process of designing the new MINI Cooper. To dive into Frank Stephenson’s framing and unfold his reasoning, we collect both secondary archival data and data from a semi-structured interview with the designer. From the interview data, we analyse Frank Stephenson’s process of designing the new MINI Cooper and how he *mentally stands back from the specifics of the accumulated* to build frames that are pertinent across time to make the MINI design both timeless and timely. Finally, we discuss how this study contributes to studies on framing and timing in design: how the product is framed according to time and how this connects to a larger perspective on how design experts may deliberately work with understanding timeless values while modifying, transforming or creating new timely working principles and frames.

1 Theory

1.1 Timeless and timely

Designers can shape the future through their products by pushing meanings, technology and habits forward in time. Although time has been a core concept in understanding the development of innovation, to our knowledge, the concept of time has received proportionally less attention in design research (Gasparin & Neyland, 2018; Humphries & Smith, 2014). Scholars since Loos (1908) have discussed how to make *timeless* designs, which are designs

not influenced by changing consumer tastes and preferences, and *timely* designs, which are designs that adapt to consumer trends (Mugge, Schoormans, & Schifferstein, 2005).

Studies on timeless designs typically strive to uncover how to create an ideal design (Bloch, 1995). This is a design that is either unique or separated from popular trends; that is, aesthetics do not mark a specific time (Lobos, 2014). Scholars have found that to create timeless designs, designers must focus on making exceptionally beautiful, simple or nostalgic designs (Flood Heaton & McDonagh, 2017). Such timelessness design strategies as simplicity and neo-retro design style have been shown to increase the longevity of, for example, refurbished designs (Wallner, Magnier, & Mugge, 2020). Although timeless designs endure over a long time span, they cannot tap into relevant and popular trends or the changing needs of society. We propose that expert designers integrate timeless elements into their design so that the design may be attractive across different points in time. As design icons are both a mirror of their time and relevant across time (Skibsted & Aagaard, 2008, pp. 25–65), we seek to unfold this process in this paper.

Conversely, timely design works with understanding changing consumer preferences—that is, what is resonating and relevant in the present context. Prior studies have analysed timely design strategies by examining, for example, how to design new products that may tap into current trends (Chang, 2003), that is, *situating* the design to the present context. The notion of ‘situating’ draws on Suchman’s (1987, pp. 49–67) notion of situated actions. This emphasises how actions fundamentally depend on the circumstances in which they unfold. She argued that one should study how actions are situated in their circumstances, rather than abstracting actions from their contextual circumstances in an attempt to reconstruct them in a rational plan and generalise them. Accordingly, we argue that expert designers understand and work with situating their design so that it resonates, as the relevance of a design fundamentally depends on the circumstances in which it unfolds. By contrast, designs that aim only to follow trends are likely to be prematurely outdated (den Hollander, Bakker, & Hultink, 2017; Hagedorn, Buchert, & Stark, 2018).

In this paper, we aim to understand how expert designers create designs that are both timeless and timely. To examine how design experts use the concept of time in their reasoning, we review the research on framing as a strategic tool.

1.2 Framing as a strategic tool

The concept of frames has been studied in several fields of research (for books on framing in other fields, cf. Bateson, 1972; Goffman, 1974). As previous research has shown, examining designers’ frames gives us insight into the reasoning central to problem and solution interpretation in the design process

(Dorst, 2011; Dorst & Cross, 2001; Valkenburg, 2000). Frames are key enablers of sense-making, conveying and capturing meaning that is evident in how designers integrate the understanding of the problem and in how they propose and evaluate different aspects of the solution (Figure 1) (Haase & Laursen, 2019).

Solution frames are based on insight into how the solution will work to achieve an aspired value. For example, B&O's Beoplay A9 is built on the insight that previous B&O products from their present portfolio (framed as black sculptures) did not appeal to young people, as evident from competing products. With the overall aspiration of introducing young people to the B&O brand, quality and experience, the A9 speaker and its successive generation were designed with working principles that resembled a piece of furniture with wooden legs and fabric cover. The designer framed the A9 as 'a designer chair and not a pretentious sculpture' (Haase & Laursen, 2018).

Laursen and Haase (2020) showed that expert designers are particularly skilled in reading, interpreting and adopting frames from other successful or exemplary products and the internal product portfolio. These examples show that frames are used as a strategic tool and align with previous research that suggests three main relations to consider when using design as a strategic tool: 1) the present product portfolio, 2) the succession of previous generations and 3) competitive products (Warell, 2004; Person, Snelders, Karjalainen, & Schoormans, 2007). Consequently, a key strategic challenge for designers is choosing between adopting a frame directly from existing products, whether it is in their own product portfolio or in their competitors' to create a recognition of origin, or repositioning the frame to draw attention to new product generation (Person et al., 2007). A recent study (Laursen & Haase, 2020) has shown how designers at LEGO drew on the framing of 'Sim City' (a competitive product) to integrate aspired values and working principles from digital gaming into the physical city-building experience drawn from present portfolio strengths—the modular LEGO bricks—to frame their new main attractions at LEGO House (succession of previous generations). These studies show that expert designers can see, adopt and transform frames from competing products and the present product portfolio to consider the framing of the succession of product generations.

When individual designers frame and interpret embedded product frames, they deploy and draw on their past experiences and tacit knowledge (Schön, 1988). The key frames explain and portray the strategic considerations involved in creating the design (Stompff, Schmulders, & Henze, 2016). During a design project, frames can be probed, tested, refined, nuanced or eliminated. This enables designers to make decisions and thus navigate and progress in the design process (Buchanan, 1992). This makes them complex units that specify

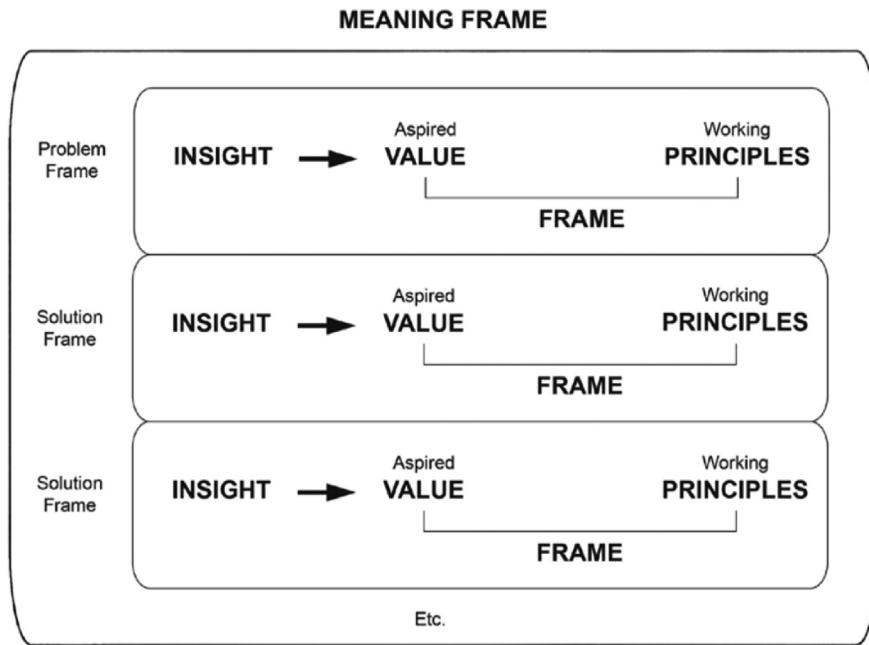


Figure 1 Haase and Laursen's (2019, p. 24) meaning frames encompass both problem frames, which are defined at the beginning of the process, and multiple solution frames, each addressing a particular aspect of the product. This insight leads to the proposal of a frame that connects an aspired value to a set of working principles

relevant issues and ultimately, the boundaries and criteria for evaluating the design situation (Hey et al., 2007; Schön and Rein, 1994).

To better understand the reasoning of a design expert during the design process, we examine in this paper how an expert designer frames the succession of product generations by assessing both frames of competitive products and the present product portfolio. We draw on these dimensions to study how design expert Frank Stephenson considers the dimension of time.

Scholars have shown that several framings of problem–solution pairs are applied in the process of designing (Dorst, 2011; Haase & Laursen, 2018). We build on framing research, paying attention to how frames are used in the design process, specifically how a designer creates, transforms or excludes them to design a solution. We examine Stephenson's reading and interpretation of frames in other products and how he uses frames in the design of the MINI Cooper released in 2001. Although frames have been studied in detail in research on metaphors, aspired values and problem–solution pairs, this study aims to analyse the connection between time and framing to examine how expert designers use framing as a cognitive device to understand time

in terms of timeless and timely aspirations in their designs. Therefore, we study the framing of time in the process and in the final product.

2 Methodology

When identifying a case study for an exploratory study, a primary consideration is that the selected case should provide the best opportunity for collecting the most relevant data (Strauss & Corbin, 1990). To undertake a study on how expert designers work with time and framing, we must first ensure that the chosen designer is an expert and that the case should be considered successful and relevant, considering the research topic of time and timing. Car designer Frank Stephenson is what Cross (2004) defines as an outstanding designer: ‘Highly creative or talented individuals become successful and highly regarded designers, with international reputations both within and beyond their professional peer groups’ (pp. 437–438). Aside from the new MINI Cooper, Frank Stephenson has overseen the teams that designed the body work and interiors of the Fiat 500, BMW X5, Ferrari 430, Maserati MC12, Ford Escort Cosworth, McLaren MP4-12C and McLaren P1. Stephenson’s MINI design may be considered a celebrity case, that is, a case that attracts a high level of public attention and positive emotional responses (Rindova, Pollock, & Hayward, 2006). Such cases characteristically receive high media coverage, as evidenced by the Netflix movie about the work of Frank Stephenson called *Chasing Perfect* (Coan, 2019), and thus practitioners tend to have positive dispositions and an interest in the practices of expert designers (Rindova et al., 2006). Consequently, their practices tend to affect their wider research and practitioner communities. Therefore, although the findings of the examined case may not be generalisable, the process and practices—given their status—affect design practices in general [cf. Frank Stephenson (2022) explaining his process to 206 000 followers on YouTube]. This makes them interesting from a research perspective.

In this study, we collected data through an interview about Stephenson’s design process, together with sketches, videos and newspaper clippings. Studies concerned with the development of seminal design and how it developed over time have little choice but to make use of retrospective interviews, as time must pass before a design can be recognised as seminal. As Sosniak (2006) stated, ‘The question, then, is not whether we need to use the method of retrospective interview in the study of expertise, but, rather how best to use the method’ (p. 287). Previous studies have shown that expert designers use explicit problem-decomposing strategies that novices do not appear to possess (Ho, 2001). To understand these strategies, we collected data on one case through a semi-structured interview. The single case study is relevant and interesting when the case is (1) rare and unusual, (2) an opportunity to study a previously inaccessible phenomenon or (3) critical for testing a theory (Yin, 2009, pp. 38–44). As in the case of the MINI, it presents an opportunity

to study a unique case that has previously received limited first-hand attention from researchers. Moreover, the use of a single case is supported in expertise research, in which [Wagner and Stanovich \(1996\)](#) argued that we ‘cannot really do a prospective, developmental study of 50 million individuals to obtain an ultimate sample of 50 individuals whose level of performance is 1 in a million’ (p. 100).

The interview was semi-structured to allow for both direction within the scope and to follow and understand unexpected avenues and findings. ‘Retrospective interview studies allow for an examination of experience through the learner’s eye, which may at times be quite different from what an outside observer thinks he or she is seeing’ ([Sosniak, 2006](#), p. 292). The interview procedure was as follows: The informant was prepared in advance regarding the scope of the research via email. We informed him that the study concerned design expertise and expert performance and that we aimed to understand his reasoning and perspective on a particular design project. We also asked if he could bring material to the design process, such as sketches, to document the occurrence of events and support a more accurate recollection of the detail and depth of the design activities. Frank Stephenson brought sketches, displayed digitally, to the interview. Lastly, we agreed that the interview would be 1–2 h long to allow for joint reflection and the pursuit of surprising new research insights. The interview was transcribed afterwards. Using the interview transcript, we analysed the key steps in Frank Stephenson’s methodology, coding the aspired values, working principles and frames across different points in time and different aspects.

3 *The case of the MINI Cooper*

The original Mini¹ was launched in 1959, and its design remained moderately unchanged for 40 years. It soon became a long-lasting success in car design and a popular culture icon.

BMW acquired the Rover Group in 1994 and started developing the new MINI Cooper in 1995. Renewing an English icon was quite a challenging task for the German car manufacturer: *‘We can’t get it wrong because it’s an English icon. They will kill us. The public will say: You take an English product, and you haven’t done it justice. Shame on you!’* Thus, BMW invested heavily in getting the design right. *‘BMW said we can’t make a mistake. We have to absolutely get the design right, so let’s make 15!’* BMW promoted a closed competition among 15 design teams across the world. They hired 15 designers and their respective teams from different parts of the world to each design a unique proposal for the new MINI in isolation.

Each team spent six months developing the concept and respective full-scale model before pitching it to BMW. In the final evaluation, the 14 executives

unanimously chose Frank Stephenson's winning design proposal. Frank Stephenson, a senior designer at BMW at the time, led the team responsible for the winning design, thus becoming the chief designer overseeing the design of the exterior and interior of the new MINI, which was launched in 2001. In the next subsections, we characterise Frank Stephenson's approach to framing based on the semi-structured interview and secondary data for further contextualising his decisions.

3.1 Framing the problem

The briefing for the redesign of the MINI was completely open; the only requirement from BMW was that the overall length of the new MINI needed to be exactly 3.6 m long. Thus, the design task required a framing of the problem. Frank Stephenson explains his insight for framing the problem as follows: *'So everyone knows the Mini, and even more so, anyone who has a Mini gives it a name. They call it Johnny Boy or Susy Sally. They form a relationship with the brand because it's cute. Seriously, but it's cute. It's part of the family a lot of the time. Everybody is using it, so it's a very strong brand. And it was very unique, even when it first came out. It was the first time they had taken the engine in a car and turned it sideways. So they could make space inside the car'*. (00:10:51)

Due to the unique character of the existing Mini, Frank Stephenson developed the aspired value and frame for redesigning the new MINI. *'The Mini, for me, had to look like an evolution, like a DNA, like a genetic link, so it kind of looks like its great grandfather, but it's faster, stronger, more intelligent, more capable, more comfortable. So it had to be a grown-up version—much more mature, a newer version—but keeping the emotion of the past'* (00:13:45).

The new MINI should be a family evolution that would transform the principles of the original design into a new version, keeping the aspired values. Frank Stephenson explained that some of these working principles came from the assessment of the original Mini and the minor modifications introduced over the initial years of production (Figure 2).

The original Mini was defined as a people's car and an English icon that encapsulated a clever combination of many features that turned it into a successful car. The transverse engine provided room for a layout that maximised the interior space for passengers and storage, thereby redefining the perception of space in small cars. The driving dynamics were agile due to short overhangs. The cost-effective production process of welding the external flanges of the body panels resulted in an aesthetic language of its own, with a unique roof and a diagonal line in the extension of the A-pillar in the side view of the car.

The racing car version, designed by Alec Issigonis in collaboration with John Cooper in 1961, introduced a new meaning to the original people's car, thus

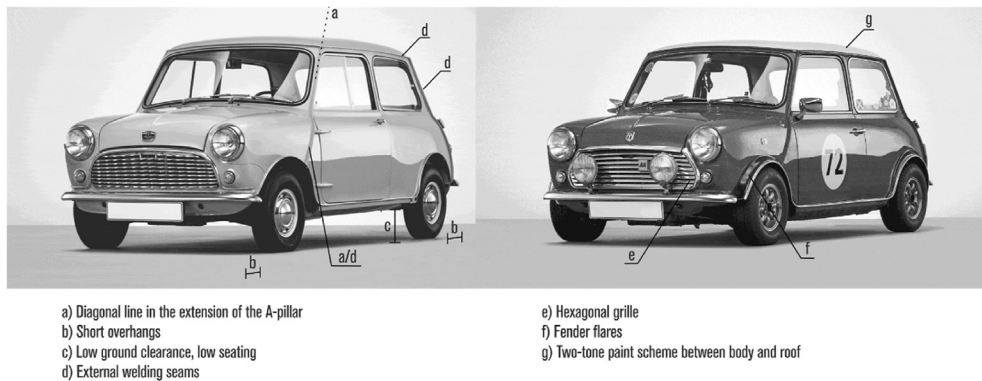


Figure 2 Working principles and design features represented in the original Mini and the 1961 Mini Cooper. Source: MINI (2021)

infusing its DNA with performance specifications. External design features included a hexagonal grille, fender flares and a two-tone paint scheme between the body and the roof (Paternie, 2002). In the interior, the racing car principles were translated into the central speedometer, chrome gearshift and two-tone colour schemes of the seats and door panels.

Both the original Mini and the 1961 Mini Cooper were successful products that achieved the status of popular icons. By clarifying both models in the formulation of the design DNA for the new MINI, Stephenson included nuances regarding the target audience, meanings, working principles and design features that were subject to interpretation for the evolution of the Mini design language. Moreover, such an understanding considers both the original Mini and the 1961 Mini Cooper as derived from the same product platform. Product platform is paramount in the car industry, in which each version of a model comprises different variants that can be defined by body style, fuel type, engine size or other options.

Frank Stephenson explains that his approach to addressing the overall design task consists of breaking it up into small time transformations, which will be examined in the following sub-sections. *‘What I did—because the Mini was the same car from 1959 to 1999, 40 years—I thought if it had changed every ten years, 1969, ’79, ’89, what would that look for every decade?’*

3.2 Framing through time

According to Frank Stephenson, the key principle of the methodology for developing the new MINI Cooper was breaking down the complexity of the required 40-year transformation into incremental frames. *‘As a designer [...] you have to use intelligent dreaming. What I did was I took little bites’* (00:12:05). He designed a version of the Mini for each decade, modelling its transformation to respond to different factors as follows: (1) addressing the

aspired values of users and the context of the time, (2) competing in a growing market with upcoming players that became stronger and challenged the Mini segment, (3) achieving higher standards of security and the corresponding legislation and (4) integrating technological developments in the car industry while being perceived as an innovator.

Frank Stephenson conducted weekly design sprints to situate the Mini through the decades.

‘Three days of [...] researching, seeing what the world market was like [...] and then the last two days, designing it quickly. A lot of it was research in a week’ (00:25:58). [Figure 3](#) shows Stephenson’s final sketches for each decade, together with secondary data on successful cars, that would compete with the Mini in the respective decade. [Figure 3](#) supports two complementary levels of assessment in Stephenson’s method for designing the new MINI Cooper. The first level is synchronic and situates each Mini version in the market within its corresponding decade. The second level is diachronic and considers the evolution of the Mini design language from decade to decade.

Research on the Mini designs involved assessing the competition. *‘So I would research what all the small cars in that segment looked like in the different companies, in the world. Which ones were the successful ones and which weren’t the successful ones. So the unsuccessful ones, I would get rid of those and would just concentrate on the top 5 cars from that segment. And research if any of them had brand history or what the people liked about those cars. What kind of public bought the car? If it was older public, younger public?’* (00.26.36).

By establishing a visual relationship between the competition and the proposed Mini for each decade, Frank Stephenson situated the Mini in its context, thus clarifying the aspired values, working principles and relation between both, that is, the frames. Furthermore, this allows for inquiries into how the aspects associated with the target audience would evolve and could be included as timely requirements. *‘What is the average height of a person ten years later? How much taller were they from ten years ago? How much farther away from home are they travelling? How many days of vacation do they take? What kinds of clothes do they wear for work? What kinds of clothes do they wear for leisure?’* (00.30.54).

The second level of assessment addresses the evolution from decade to decade, thus supporting a reflection on the patterns of evolution of the Mini in tandem with the evolution of the market.

‘In ’69, I made it a little bit taller. I put chrome bumpers; we all used chrome bumpers. In ’79, we started to make it very long and safe. So if you hit









1959	1969	1979	1989	1999
				
 BMW Isetta, 1955. Source: (Pixabay, 2016a).	 Renault 4L, 1961. Source: (Pixabay, 2016b).	 Datsun Cherry, 1970. Source: (Charles01, 2014).	 Austin Mini Metro, 1980. Source: (Charles01, 2007).	 Fiat Cinquecento, 1991. Source: (Fiat, 2021).
 Messerschmitt KR 200, 1955. Source: (Pixabay, 2018).	 Fiat 850, 1964. Source: (Pixabay, 2021).	 Honda Civic, 1972. Source: (Honda, 2020).	 Fiat Panda, 1980. Source: (Lechita, 2010).	 Renault Twingo, 1992. Source: (Renault, n.d).
	 Honda N360, 1967. Source: (Dachet, 2010).	 Renault 5, 1972. Source: (Charles01, 2015).	 Ford Fiesta, 1983. Source: (Ford, 2021).	 Opel Corsa, 1993. Source: (Opel, 2020).
		 Volkswagen Golf I, 1974. Source: (Volkswagen, 2021).	 Citroen AX, 1987. Source: (Citroen, 2021).	 Ford Ka, 1996. Source: (Ford, 2021).

Figure 3 Frank Stephenson's concepts for the Mini evolution through the decades (top row), 'situated' within its main competitors (in each column)

something, you had a lot of space here. You had the protection. They didn't like that, so then we started to go a bit more sporty' (00:25.21).

For example, when the original Mini was launched, the main competitors were in the previous lower segment of microcars that addressed the need for more affordable transportation in the post-war period. The Mini created value with a more reliable motor and robust construction.

'Like in the '70s, there was a focus on the safety of the cars, but the cars looked ugly. Almost like they were less about design and looking good and more about big bumpers and protection on the sides with big fat mouldings. So, for the '79, I made it look ugly, but it had to look like this because that was what was happening in the 70s' (00:12:33).

From the 1970s onwards, the direct competition included cars in the next segment that acknowledged buyers' changes in lifestyle, with larger boot sizes and engine volumes, as well as safety requirements with larger plastic bumpers. This type of insight supported the change in segment of the new MINI Cooper from a microcar to the smallest compact cars.

'And then in the '80s. I thought that the car ['79 version] wouldn't have sold very well. They would have seen that it wasn't selling well because it was so ugly. Now, we start to make it more beautiful. So the '89 version starts to become a lot more attractive' (00:13:33).

Furthermore, the method required developing a tangible representation of the Mini that would establish a relationship between the identified values and the design language principles of the Mini and support the evolution of its successor. Simultaneously, this enabled the assessment of the Mini versions in relation to the industry, users and market. Consequently, the final version was not a leap in 40 years' time but an evolution using similar reasoning methods employed in the car design industry, in which models are fully redesigned every four to seven years.

3.3 Framing the final design

'So when they saw the new one, they immediately saw like the grandson. And wow, I can see the relationship' (00:18:02).

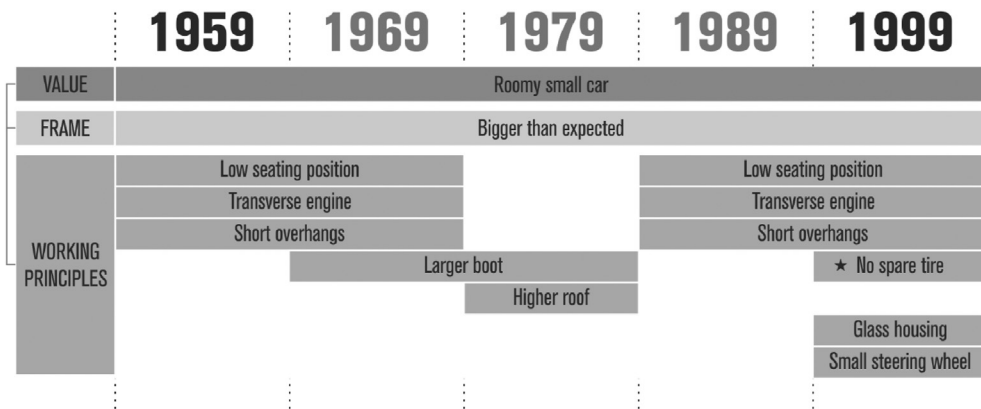
This subsection presents different aspects of evolving the original Mini design language (defined in 3.1) into the 2001 MINI Cooper. The figures show the evolution of the solution frames through the decades, identifying when each aspired value, frame and working principle is established, continued, transformed or unused.

3.3.1 The 'roomy small car' value

The original Mini was a roomy small car considered 'bigger than expected' (Figure 4). This frame was made possible by the use of the transverse engine, short overhangs and a low seating position.

Frank Stephenson reinterpreted the same aspired value and frame to design concept versions for the next few decades. In the 1969 version, a new working principle was introduced—a larger boot—to respond to market requirements.

The final design maintained the original aspired value, frame and working principles, even though they were reinterpreted according to new requirements from the 21st-century context. The frame was interpreted by playing with the perceptions of larger and wider.



★ Transformed from previous

Figure 4 The evolution of the value of 'roomy small car', its frame and working principles applied in the development process of the new MINI Cooper

'Packaging is very important. You can put people in, and they start to wonder, "Gosh, we have more space than we thought. It's a small car". It's an ingenious solution to how to ... it's just forward thinking to how do you increase space inside of a car, when before, there wasn't that much space? You reduce the size of things. It's a trick, but if you do it correctly, it's an advantage.

The door panels. Instead of having them come out, you push them further away from you, so you have more space here. The headroom for things like that. Visibility is very important. If you are looking through small windows, you feel like you are in a small box. And we would make the glass wider, and the pillars would become smaller. So you still have the pillars, but it's not so wide. So, "Oh, I can see better". So the visibility ... like a house with bigger windows, you know?' (00:21:40).

The use of glass and the positioning of rear lights exemplify how the aspired value and frame were linked to the new working principles and design features. The extended glass surface contributed to the perception of 'bigger than expected'. It integrated the pillars of the car, concealing what was commonly a structural and visible element of car design while pushing the contemporary design language in car design by the end of the 1990s. The frameless windows created a distinctive look and a higher perceived quality compared to other cars in the same segment. The position of the rear lights did not follow the typical integration with the boot of the car or the extension from the boot onto the side panel; instead, a slot in the back of the panel gave the impression that the car was wider than it was.

In the interior, the ‘bigger than expected’ frame was expressed by reducing the steering wheel and lowering the hip point of the driver’s seat. These working principles also contributed to the ‘driving dynamics value—go-kart experience frame’ (detailed in Section 3.3.3). To optimise the boot space, the spare tire was absent. In addition, the new MINI Cooper was the only car in its class to feature tire pressure sensors to indicate a puncture and to have a repair kit for it.

3.3.2 The ‘clever use of technology’ value

Figure 5 shows that the initial ‘reliable and cheap’ frame evolved in the 1979 version to accommodate safety due to legislation requirements. Stephenson created a new frame—‘high tech’—to achieve the aspired value of ‘clever use of technology’ for the final design to target the premium market, as competition for the ‘reliable and cheap’ frame was no longer part of the brand’s strategic stance. Accordingly, new working principles were developed. Besides the tire pressure sensors indicated above, the new MINI Cooper employed manufacturing techniques that challenged the industry, namely the ones used to produce the side-rear panels due to the position of the rear lights and the clamshell bonnet integrating the hood and fenders.

‘There is a diagonal line on the Mini that was made so that the car could be made very easily, and I kept that all the time ‘cause no other car had it’ (00:23:33).

According to Frank Stephenson, the clamshell bonnet was designed this way as a modern interpretation of several features of the original design language. The diagonal line of the original weld flange on the side of the car (Figure 1) was interpreted as the end line of the bonnet.

‘We have to make this piece [clamshell bonnet] in a tool! It’s too big. We can’t make it. It’s too deep. When you press the metal, a flat piece of metal, and take the shape, it has to be this deep ... And they kept saying no, no, no, no. We kept trying, trying, trying, trying, trying, trying, trying. Different angles, different thicknesses of metal and different problem areas of when they were pressing. It was not smooth; it was wrinkled. And we kept modifying, adjusting and adjusting. Because the easiest thing would be for me to just say, okay, we’ll not do it. We just put a normal hood on it, and we forget this line ... When people first saw it, they were, “How did you do that? You can’t do that. It’s impossible!” But no, we did it!’ (00:54:35).

What was originally a symbol of the clever use of technology was transformed into an aesthetic feature as an homage and showed a higher tension to suit a timely design language.

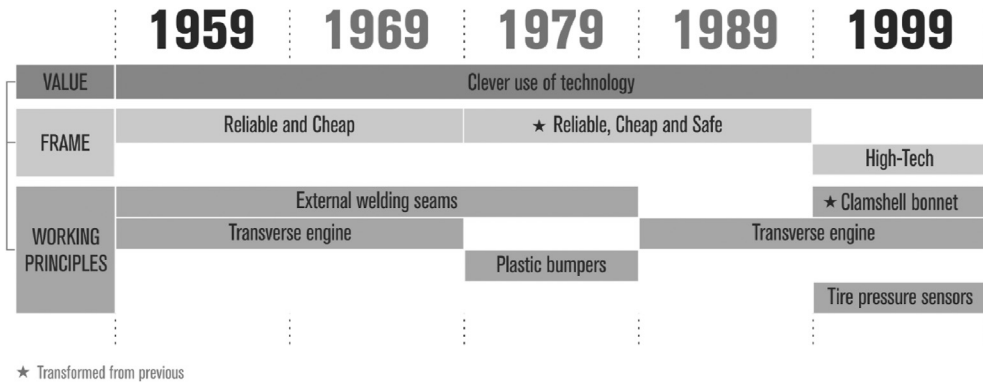


Figure 5 The evolution of the value of ‘clever use of technology’, its frames and working principles applied in the development process of the new MINI Cooper

The original circular headlights were interpreted as ovals leaning backwards, accentuating the aerodynamics and a sporty look. Furthermore, the original structural crest of the hood was transformed into a power bulge typical of performance cars.

3.3.3 The ‘driving dynamics’ value

‘The driving experience was similar because the original Mini was one of the cars you weren’t afraid to push it. Because you could ... It was like you could throw it! (...) Cars today, they can’t do that. They scare you when you do it ... The new one had the same driving dynamics. We call it very quick to move, very light, very easy to move’ (00:19:48).

The value ‘driving dynamics’ and the frame ‘go-kart experience’ were maintained from the original design (Figure 6). There was an evolution of this value–frame pair through the decades. In the 1969 version, the rear overhang was longer to accommodate a large boot. The overhangs were increased in the 1979 version, failing to employ the value–frame pair and contributing to a loss of character of the Mini. In reaction to this, there was a progressive shortening of the overhangs in the 1989 version and a shortening to the minimum in the 1999 version, thus recovering the original formulation of the ‘driving dynamics’ and the ‘go-kart experience’.

3.3.4 The ‘unique character’ value

The original Mini and the 1961 Mini Cooper comprised distinct frames for the unique character value. The original Mini was a ‘reliable family car’, whereas the 1961 version designed by Issigonis and Cooper developed new working principles to create a ‘racing car’ frame, as summarised in the first two columns of Figure 7. Stephenson introduced the ‘English bulldog’ frame to summarise

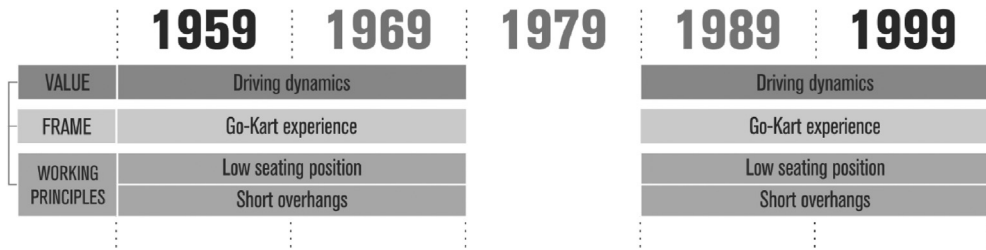


Figure 6 The evolution of the value of 'driving dynamics', its frame and working principles applied in the development process of the new MINI Cooper

aspects of the original design language and establish a unique character for the 1999 version of the new MINI Cooper.

'... The Mini is not sweet. The Fiat 500 is sweet, and the Volkswagen Beetle is sweet. The Mini ... you want it like a bulldog. You know, the English bulldog that is low, wide. You don't know whether you'd like to pet it or be careful. That was the feeling for Mini. Plus, it was an English bulldog, so it fit perfectly ... So, I tried to give it this low, wide-squared, serious look. And there are elements like the front of the car, the grille ... you know where the air comes in. I split it into two. I made it half on top, half on bottom, and the bottom I pushed forward' (00:15:29).

Decisive working principles and design features from the original design language were reinterpreted with new functions, shapes and materials. The size of the front grille and the forward projection of its lower part, when observed sideways, contributed to achieving the desired English bulldog expression. More examples include the above-mentioned headlights, the diagonal line in the clamshell bonnet, the rear lights of the original Mini and the fender flares, the two-colour scheme, the hexagonal grille and the central speedometer flanked by two smaller gauges introduced in 1961 and reinterpreted in the 2001 MINI Cooper as a central speedometer flanked by two air vents.

4 Discussion

Designing the evolution of the original Mini 40 years into the future was a challenge that Frank Stephenson and his team transformed into manageable design problems. In retrospect, we can affirm that the methodology of designing a Mini for each decade decreases the complexity of the overall design problem into a set of similar problems that resonate with the activity of a car designer redesigning a production model for a company. Analysing the original Mini in tandem with the alterations introduced in the initial years of production constrains the original design language into a product platform strategy comprising different versions and variants sharing the same DNA.

Timely and timeless framing

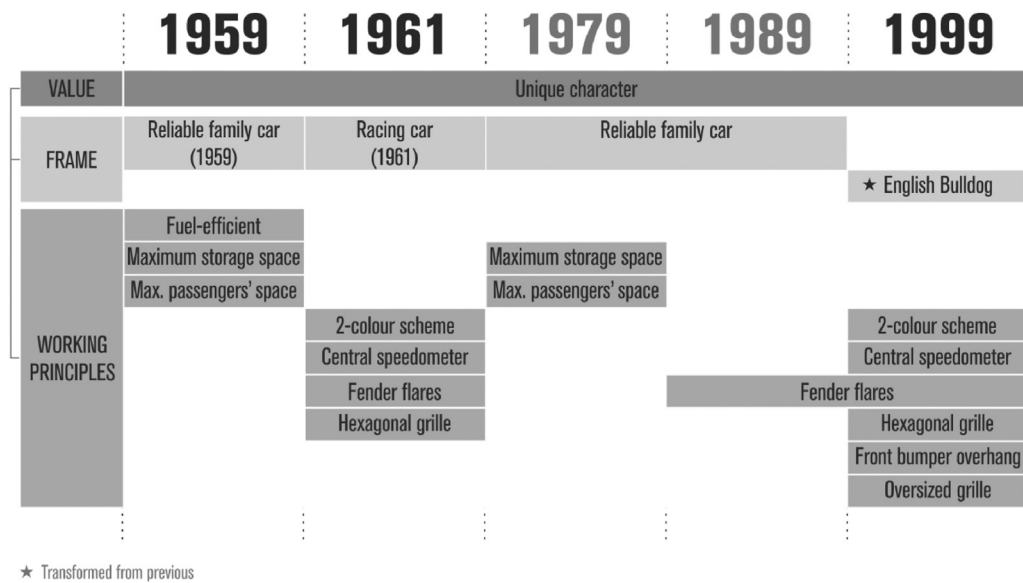


Figure 7 The evolution of the value of 'unique character', its frames and working principles applied in the development process of the new MINI Cooper

In the study, we found evidence of the centrality of 'the framing of time' in Frank Stephenson's process of designing the new MINI Cooper (Figure 8). The new MINI Cooper design is both timeless and timely. The reasoning behind the design over the decades reveals that there are aspired values that remain timeless. Thus, we contribute to recent research on timeless design, which has focused on how to make an ideal design (Bloch, 1995; Wallner et al., 2020), by suggesting that instead of the working principles, the anchor points of timeless design are the aspired values and frames. Previous research has identified that in new product development, designers often need to resolve conflicting goals regarding the present product portfolio, the succession of product generations and the products of competitors (Person et al., 2007). Furthermore, these aspired values are tied to brand heritage and expressed in the lead products (Karjalainen & Snelders, 2010). Building on these identified drivers and constraints, our research unravels how designers approach conflicting factors in practice. The method of creating, refining, transforming or establishing new frames or working principles is how designers accommodate internal factors, such as established brand values, or external factors, such as market behaviour or increasing competition. The cycle of iteration and analysis is key to providing better sense-making of the final design in expressing the core brand (timeless) values in a timely manner.

Furthermore, we uncovered how Frank Stephenson analysed other cars across time and transformed the working principles to update and transform frames. His design process shows that framing the new MINI requires assessing the



Figure 8 The evolution of aspired values, frames and working principles in the development process of the new MINI Cooper

Timely and timeless framing

relevance of both the framing and the working principles while considering the changing context.

Frames can be revised to respond to timely requirements, such as increased competition in the market segment, updates to legislation or new user needs. Developing a new frame may entail redefining the strategic position of the brand (e.g. 'high-tech' frame). New frames (e.g. 'English bulldog') can also support assessing past working principles in a novel way that enables a contemporary interpretation of the timeless values.

The working principles and design features are timely in responding to the context, materials and aesthetics of the present and are assessed in relation to the market and competitors. We can define such working principles as synchronic. The working principles derived from previous generations of products must be interpreted in light of the conditions, to become *situated*. Even though there are original design language elements that serve as guidelines, their transformations must provide new meanings beyond rule-based geometrical transformations. We define this category of working principles as diachronic.

This means that our study extends the current design research on framing (Dorst, 2011; Haase & Laursen, 2018) with a time dimension, suggesting that while the aspired values (i.e. roomy small car; clever use of technology; driving dynamics; unique character) are characteristic, timeless priorities for a car such as the MINI, the working principles of how, for example, the 'unique' character is expressed need transformation according to a specific changing context. Thus, in the work of framing a redesign, what working principles and design features should be included or excluded and which frames should be created to respond to timely requirements should be assessed (Figure 9). The maintained working principles, and in some cases the frames, act as boundary conditions for design development. They enable designers to establish a link to the past that serves as a benchmark and clarifies evaluation criteria used in assessing design iterations (Figure 8).

Therefore, we advance and contribute to studies on framing and timing in design—that is, how the product is framed according to time. This opens up future research questions on how designers work with time. For example, future research could examine whether the framing of time is more present in some industries and product categories than in others. As this is a redesign and update of an existing design, future research could seek to understand how designers work with timely and timeless framing of new designs. Furthermore, we suggest that our findings be examined on a larger scale and at different skill and competence levels.

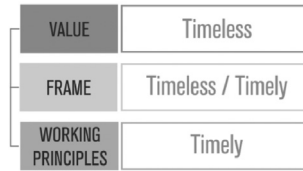


Figure 9 Framing: Timeless values, timeless/timely frames and timely working principles

For design practice, we present a larger perspective of how design experts may deliberately work with understanding timeless values while modifying, transforming or creating new timely working principles and frames. Our study suggests how designers may approach the task of redesigning or updating products in practice. First, they may identify prominent aspired values. Second, they may assess the frames and working principles to understand which ones evolve, which ones remain, and which ones should not proceed to the next generation. Third, they may analyse, borrow and integrate relevant working principles from other successful competing products. This approach enables designers to work with and renew a company's design DNA by understanding unchanging aspired values while renewing working principles and frames that may be outdated or irrelevant in the new context.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Notes

1. In this paper, 'Mini' refers to older versions, and the capitalised 'MINI' refers to the trademark owned by BMW.

References

- Bateson, G. (1972). *Steps to an ecology of mind*. New York, NY: Ballantine Books.
- Bloch, P. H. (1995). Seeking the ideal form: Product design and consumer response. *Journal of Marketing*, 59(3), 16–29.
- Borah, P. (2011). Conceptual issues in framing theory: A systematic examination of a decade's literature. *Journal of Communication*, 61(2), 246–263.
- Buchanan, R. (1992). Wicked problems in design thinking. *Design Issues*, 8(2), 5–21.
- Chang, W. C. (2003). Researching design trends for the redesign of product form. *Design Studies*, 24(2), 173–180.
- Chase, W. G., & Simon, H. A. (1973). The mind's eye in chess. In W. G. Chase (Ed.), *Visual information processing* (pp. 215–281). Oxford, England: Academic Press.
- Coan, H. (2019). *Chasing perfect. The incredible story of Frank Stephenson*. [Documentary film]. United Kingdom: Netflix.

- Cross, N. (2004). Expertise in design: An overview. *Design Studies*, 25(5), 427–441.
- Cross, N. (2018). Developing design as a discipline. *Journal of Engineering Design*, 29(12), 691–708.
- Csikszentmihalyi, M., & Robinson, R. E. (2014). Culture, time, and the development of talent. In *The systems model of creativity* (pp. 27–46). Dordrecht, Netherlands: Springer.
- Dorst, K. (2011). The core of ‘design thinking’ and its applications. *Design Studies*, 32, 521–532.
- Dorst, K. (2015). *Framing innovation*. Cambridge, Massachusetts: MIT Press.
- Dorst, K., & Cross, N. (2001). Creativity in the design process: Co-evolution of problem–solution. *Design Studies*, 22(5), 425–437.
- den Hollander, M. C., Bakker, C. A., & Hultink, E. J. (2017). Product design in a circular economy: Development of a typology of key concepts and terms. *Journal of Industrial Ecology*, 21(3), 517–525.
- Flood Heaton, R., & McDonagh, D. (2017). Can timelessness through prototypicality support sustainability? A strategy for product designers. *The Design Journal*, 20, S110–S121.
- Gasparin, M., & Neyland, D. (2018). We have always been modern (ist): Temporality and the organisational management of ‘timeless’ iconic chairs. *Organization*, 25(3), 354–373.
- Ge, X., Leifer, L., & Shui, L. (2021). Situated emotion and its constructive role in collaborative design: A mixed-method study of experienced designers. *Design Studies*, 75(1), 101020.
- Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*. Boston, MA: Harvard University Press.
- Haase, L. M., & Laursen, L. N. (2018). Reasoning in the fuzzy front end of innovation: Framing the product DNA. *International Journal of Innovation Management*, 22(05), 1840001.
- Haase, L. M., & Laursen, L. N. (2019). Meaning frames: The structure of problem frames and solution frames. *Design Issues*, 35(3), 20–34.
- Hagedorn, L., Buchert, T., & Stark, R. (2018). Empirical study on aesthetics as an influencing factor on sustainability. In *Proceedings from 2017 International Conference on Engineering, Technology and Innovation: Engineering, Technology and Innovation Management beyond 2020: New Challenges, New Approaches, ICE/ITMC 2017* (pp. 776–783).
- Hey, J. H. G., Joyce, C. K., & Beckman, S. L. (2007). Framing innovation: Negotiating shared frames during early design phases. *Journal of Design Research*, 6(1–2), 79–99.
- Ho, C.-H. (2001). Some phenomena of problem decomposition strategy for design thinking: Differences between novices and experts. *Design Studies*, 22, 27–45.
- Humphries, C., & Smith, A. C. (2014). Talking objects: Towards a post-social research framework for exploring object narratives. *Organization*, 21(4), 477–494.
- Karjalainen, T.-M., & Snelders, D. (2010). Designing visual recognition for the brand. *Journal of Product Innovation Management*, 27, 6–22.
- Laursen, L. N., & Andersen, P. H. (2015). Is a problem well stated, a problem half solved? Quasi-experiments inside unilever on problem framing and buyer-supplier knowledge exchange. In *ISPIM Conference Proceedings*. The International Society for Professional Innovation Management.
- Laursen, L. N., & Haase, L. M. (2020, August). Reinterpreting tradition to digitalize: Framing the design DNA of LEGO House. In *Synergy: DRS International Conference 2020* (pp. 2011–2022). Design Society.

- Lawson, B., & Dorst, K. (2009). *Design expertise*. Oxford, United Kingdom: Architectural Press.
- Lobos, A. (2014). Timelessness in sustainable product design. In *Proceedings of the 9th International Conference on Design & Emotion, Bogota, Colombia, 6–10 October 2014* (pp. 169–176).
- Loos, A. (1908). Ornament and crime. In U. Conrad. (Ed.), *Programs and manifestoes on 20th-century architecture* (pp. 12–24). Cambridge, MA: MIT Press, (Published in 1971).
- Lotz, N., Sharp, H., Woodroffe, M., Blyth, R., Rajah, D., & Ranganai, T. (2014). Framing behaviours in novice interaction designers. In *Proceedings of DRS 2014: Design's Big Debates* (pp. 1178–1190). Umea Institute of Design, Umea University.
- McDonnell, J. (2018). Design roulette: A close examination of collaborative decision-making in design from the perspective of framing. *Design Studies*, 57, 75–92.
- Mugge, R., Schoormans, J. P. L., & Schifferstein, H. N. J. (2005). Design strategies to postpone consumers' product replacement: The value of a strong person–product relationship. *The Design Journal*, 8, 38–48.
- Paternie, P. (2002). *Mini Cooper*. St. Paul, MN: MotorBooks International.
- Paton, B., & Dorst, K. (2011). Briefing and reframing: A situated practice. *Design Studies*, 32(6), 573–587.
- Pee, S. H., Dorst, K., & van der Bijl-Brouwer, M. (2015). Understanding problem framing through research into metaphors. In *Proceedings of Interplay, the 6th Conference of International Association of Societies of Design Research*.
- Person, O., Snelders, D., Karjalainen, T.-M., & Schoormans, J. (2007). Complementing intuition: Insights on styling as a strategic tool. *Journal of Marketing Management*, 23(9–10), 901–916.
- Rindova, V. P., Pollock, T. G., & Hayward, M. L. (2006). Celebrity firms: The social construction of market popularity. *Academy of Management Review*, 31(1), 50–71.
- Schön, D. A. (1988). Designing: Rules, types and worlds. *Design Studies*, 9(3), 181–190.
- Schön, D. A., & Rein, M. (1994). *Frame reflection: Towards the resolution of intractable policy controversies*. New York, NY: Basis Books.
- Skibsted, J. M., & Aagaard, S. (2008). *Instant icon – Om produkter der skaber exceptionel værdi og hvordan de bliver til*. Denmark: Gyldendal Business.
- Sosniak, L. A. (2003). Developing talent: Time, task and context. *Handbook of Gifted Education*, 3, 247–253.
- Sosniak, L. A. (2006). *Retrospective interviews in the study of expertise and expert performance*. In: *The Cambridge handbook of expertise and expert performance*. New York, NY, US: Cambridge University Press 287–301.
- Stephenson, F. (2022). Home [Frank Stephenson]. Retrieved from. <https://www.youtube.com/watch?v=KoQP5qjSYvw>.
- Stompff, G., Smulders, F., & Henze, L. (2016). Surprises are the benefits: Reframing in multidisciplinary design teams. *Design Studies*, 47, 187–214. <https://doi.org/10.1016/j.destud.2016.09.004>.
- Suchman, L. A. (1987). *Plans and situated actions: The problem of human-machine communication*. Cambridge University Press.
- Valkenburg, R. (2000). *The reflective practice in product design teams*. (Doctoral dissertation). Delft, Netherlands: Delft University of Technology.
- Wagner, R. K., & Stanovich, K. E. (1996). Expertise in reading. In *The road to excellence: The acquisition of expert performance in the arts and sciences, sports, and games* (pp. 189–225). Lawrence Erlbaum Associates.

- Wallner, T. S., Magnier, L., & Mugge, R. (2020). An exploration of the value of timeless design styles for the consumer acceptance of refurbished products. *Sustainability*, 12(3), 1213.
- Warell, A. (2004). Towards a theory-based method for evaluation of visual form syntactics. In *TMCE, tools and methods for competitive engineering*.
- Yin, R. K. (2009) *Case study research: Design and methods, Vol. 5*. Thousand Oaks, CA: Sage.

Image credits

- Charles01. (2007). Mini Metro 5 doors [Photograph]. Wikimedia Commons. Retrieved from. https://commons.wikimedia.org/wiki/File:Early_Mini_Metro_5_door.jpg.
- Charles01. (2014). Datsun Cherry [Photograph]. Wikimedia Commons. Retrieved from. https://commons.wikimedia.org/wiki/File:Datsun_Cherry_registered_-_January_1977_988cc.JPG.
- Charles01. (2015). Renault 5 GTL [Photograph]. Wikimedia Commons. Retrieved from. https://commons.wikimedia.org/wiki/File:Renault_5_GTL_Schaffen-Diest_2015.JPG.
- Citroen. (2021). Citroen AX [Photograph]. Citroen Origins. Retrieved from. <https://www.citroenorigins.dk/da/cars/ax>.
- Dacheket. (2010). Honda N360 [Photograph]. Wikimedia Commons. Retrieved from. https://commons.wikimedia.org/wiki/File:1967-1968_Honda_N360_Type_M.jpg.
- Fiat. (2021). Fiat Cinquecento. [Photograph]. Autoevolution. Retrieved from. https://www.autoevolution.com/cars/fiat-cinquecento-1992.html#agal_25.
- Ford. (2021). Ford Fiesta 2 generation [Photograph]. Automobile Specification. Retrieved from. <https://automobile-spec.com/ford-fiesta-2-generation-hatch-back-3-dv-1-1-mt-1983-1989/>.
- Harrison, T. (2009). Fiat 126 [Photograph]. Wikimedia Commons. Retrieved from. https://commons.wikimedia.org/wiki/File:1973_Fiat_126_IMG_7855.jpg.
- Honda. (2020). Honda Civic 3 doors. [Photograph]. Autoevolution. Retrieved from. <https://www.autoevolution.com/cars/honda-civic-3-doors-1972.html#>.
- Lechita. (2010). Fiat Panda [Photograph]. Wikimedia Commons. Retrieved from. https://commons.wikimedia.org/wiki/File:Fiat_Panda_IFL.jpg.
- MINI. (2021a). MINI-mini-insider-world-of-mini-1959. [Photograph]. MINI. Retrieved from. https://www.mini.com/en_MS/home/mini-insider/the-world-of-mini.html.
- MINI. (2021b). MINI-mini-insider-world-of-mini-1969. [Photograph]. MINI. Retrieved from. https://www.mini.com/en_MS/home/mini-insider/the-world-of-mini.html.
- Opel. (2020). Opel Corsa 3 doors. [Photograph]. Autoevolution. Retrieved from. https://www.autoevolution.com/cars/opel-corsa-3-doors-1997.html#aeng_opel-corsa-3-doors-1997-10-12v.
- Pixabay. (2016a). BMW Isetta [Photograph]. Pixabay. Retrieved from. <https://pixabay.com/photos/bmw-isetta-antique-car-automobile-1308189/>.
- Pixabay. (2016b). Renault R4 [Photograph]. Pixabay. Retrieved from. <https://pixabay.com/da/photos/isolerede-renault-r4-klassiker-2742810/>.
- Pixabay. (2018). Messerschmidt KR200 [Photograph]. Pixabay. Retrieved from. <https://pixabay.com/da/photos/messerschmitt-kr200-kr-200-1x18-3432563/>.

- Pixabay. (2021). Fiat 850 [Photograph]. Pixabay. Retrieved from. <https://pixabay.com/da/illustrations/bil-fiat-850-transportere-6494960/>.
- Renault. (n.d.). Renault Twingo. [Photograph]. Autoevolution. Retrieved from https://www.autoevolution.com/cars/renault-twingo-1998.html#agal_2.
- Vauxford. (2018). Ford KA [Photograph]. Wikimedia Commons. Retrieved from. https://commons.wikimedia.org/wiki/File:2007_Ford_KA_Studio_1.3_Front.jpg.
- Volkswagen. (2021). Volkswagen Golf I 5 doors. [Photograph]. Autoevolution. Retrieved from. https://www.autoevolution.com/cars/volkswagen-golf-i-5-doors-1974.html#agal_0.