

## **Four Mindsets of Designer-Entrepreneurs**

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## Four Mindsets of Designer-Entrepreneurs

### Abstract

Literature from the business and design disciplines describes two important subprocesses of the entrepreneurial journey: new venture creation and new product development. This study uses evidence from qualitative research with Designer-entrepreneurs (D-es) to describe a third important subprocess, which we refer to as the Designer's Mindset Transition (DMT), which can either hinder or propel the other subprocesses. Thirty-seven participants, including eleven D-es in product-based start-ups, participated in the study. Four mindsets were identified within the DMT subprocess: The Artisan, the Configurator, the Opportunity Seeker, and the Design Leader. They followed a progression that moves the Designer-entrepreneur from the effectual logic (means-oriented) towards a causal logic (goal-oriented), both described by Sarasvathy (2008). Evidence from the study demonstrates that designers starting from the Artisan mindset were not always driven by their purported user-centric approach. Instead, key drivers were their ethos, interests, and beliefs, established at the outset of the venture.

**Keywords:** Designer-entrepreneurs, Design Entrepreneurship, Design Innovation, Design Start-up, Designer Mindset.

## **Introduction**

Over the last decade, there has been an emerging trend of designers becoming entrepreneurs (Gaglione and Gaziulusoy, 2019; Colombo et al., 2017; Mata-García, 2017). Designers can hone skills and competencies such as user need identification, idea generation, conceptualisation, and product development that prepare them to be natural entrepreneurs (Gunes, 2012). In this study, Designer-entrepreneurs (D-es) took an idea forward, built a product and started a business based on it.

The body of knowledge relating to this sort of designer-led entrepreneurship has been slowly but steadily increasing, in the form of handbooks (Varon and Alberti, 2019; Talarico and Heller, 2016; Basadur and Goldsby, 2016), tools (Colombo et al., 2017), typologies (Valencia et al., 2018, Chen et al., 2018), case studies (Kremel and Edman, 2019; Valencia and Pearce, 2019; Val et al., 2019; Gaglione and Gaziulusoya, 2019; Liu and Rieple, 2019; Mata-Garcia, 2017 Moller et al., 2013) and models (Mueller and Thoring, 2012).

The Business School discourse on the entrepreneurial journey of product-based start-ups attends to two key subprocesses, New Product Development (NPD) and New Venture Creation (NVC). A range of methodologies can drive each subprocess forward. For NPD in the area of tangible products, relevant and notable methodologies include the Design Council framework for innovation (Design Council, 2019), the Nesta innovation spiral (Nesta, 2019), Google design sprints (Knapp et al., 2016), human-centred design (IDEO, 2009), and design thinking (Brown, 2008). Whereas for NVC, key methodologies include the Start-up Evolution Curve (Jonikas, 2017), Nail-it then Scale-it (Furr and Ahlstrom, 2015) and the Lean Startup (Ries, 2011). To blend these two subprocesses of the entrepreneurial journey, Frog Design (2016) created the Design Ventures methodology, integrating design thinking and NVC. Mueller and Thoring (2012)

theoretically suggested a blend of design thinking and Lean Startup — “lean design thinking” — to draw from the advantages of design thinking during the ideation and building stage and the importance of quantitative methods and rigour of the Lean Startup.

Although these are well-recognised approaches, these models do not address the entrepreneur’s disciplinary background (and therefore, any intrinsic priorities, interests, and beliefs), assuming that by following them, designers, engineers, or business-people would have comparable results.

This paper presents evidence from an investigation of the entrepreneurial journeys of designers launching product-based start-ups (hereinafter referred to as D-es). It presents a third important subprocess of the entrepreneurial journey, which we refer to as the Designer’s Mindset Transition (DMT). DMT considers the necessary changes in the D-es’ priorities, interests, and beliefs at various stages of their entrepreneurial journey.

### *Research Question*

How do designers transform themselves into entrepreneurs in product-based start-ups?

### *Study Aims and Objectives*

The study aimed to understand how designers transform themselves into entrepreneurs in product-based start-ups. The main objectives were: i) to understand the entrepreneurial journey of designers leading product-based start-ups, ii) to identify milestones in the course of that journey, iii) to understand the designers’ focus, beliefs and priorities (i.e. mindset) that may hinder or propel the entrepreneurial journey, and iv) to explain how and why designers may change their focus, beliefs and priorities at different stages of the entrepreneurial journey.

## Literature Review

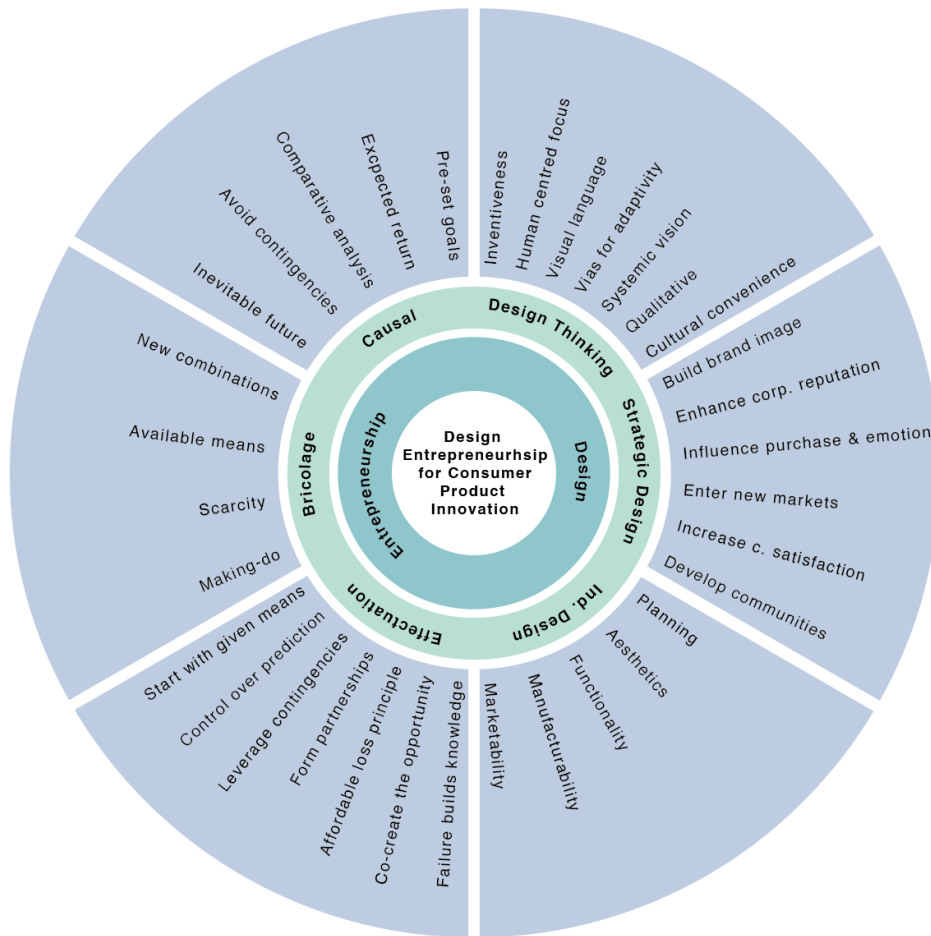
### *Understanding Design Entrepreneurship*

Ries (2011) described entrepreneurship as a kind of management, referring to the set of activities, administration of resources and planning to achieve the start-up goals. Kaehler and Grundei (2019) gather almost 30 definitions of management. The prevailing concepts consist of coordinating, planning, decision-making, integrating, organising, leading, and controlling people and resources to achieve a task or goal. Blank and Dorf (2012) defined a start-up as a temporary organisation searching for a scalable, repeatable, and profitable business model. Jonikas (2017) added that a start-up engages in technology, new products or services, new production methods, new cost structures and pricing. Therefore, entrepreneurs must manage people and resources to innovate in technology, products, or services to achieve a scalable, repeatable, and profitable business.

Within the realm of design, entrepreneurship does not have a widely accepted definition. Gunes (2012, 64) described design entrepreneurship as the “discipline in charge of producing and marketing the intellectual properties of a viable concept in terms of assuming risk, financing, and managing”. Basadur and Goldsby (2016) described a framework of design-centred entrepreneurship that comprises problem-finding, fact-finding, idea-finding, evaluation and selection, planning, acceptance, and action. This resembled several steps referred in the Design Council’s framework for innovation (Design Council, 2019). Rayan and Vaugh (2018) described design-driven entrepreneurship using business cases where entrepreneurs used the design approach as their main competitive advantage.

***Typology of approaches involved in Design Entrepreneurship***

Valencia et al. (2018) compiled the most relevant theories from design and entrepreneurship studies into a Design Entrepreneurship for Consumer Product Innovation (DECPI) typology to theoretically explain Design Entrepreneurship. The proposed typology combined the effectual and casual logic as proposed by Sarasvathy (2001), bricolage presented by Baker and Nelson (2005), strategic design as described by Calabretta (2016) and design thinking as depicted by Brown (2008). An adaptation of the DECPI typology is shown in Figure.1.



*Figure 1. The Design Entrepreneurship for Consumer Product Innovation typology (adapted from Valencia et al., 2018).*

### ***The thinking of entrepreneurs***

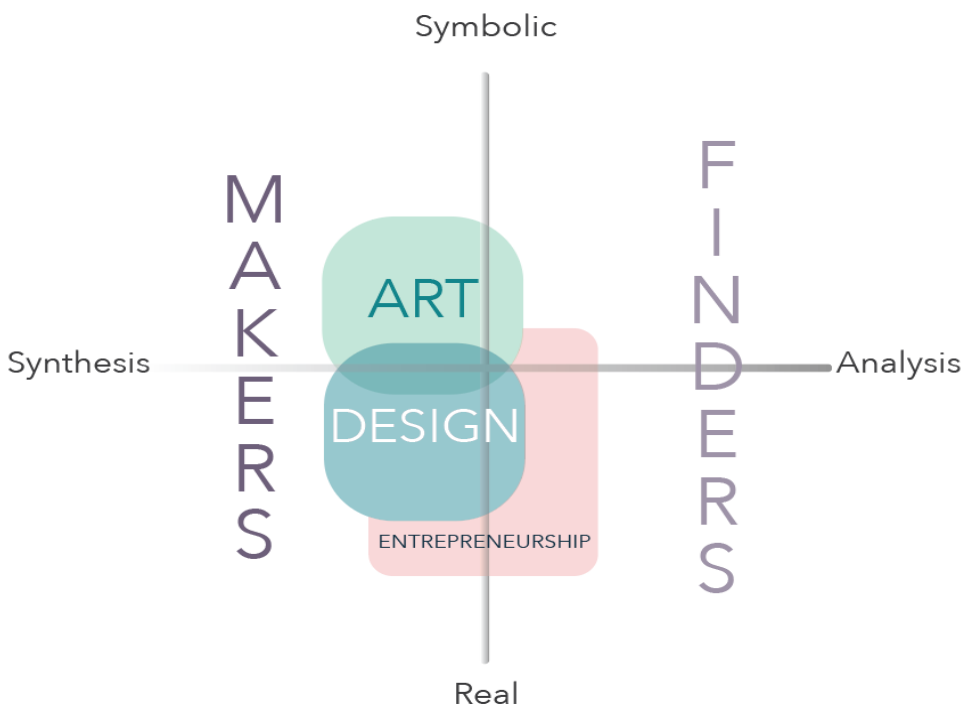
Entrepreneurial studies explained the logic used by experienced entrepreneurs, noting their predisposition to be hands-on and follow a hypothesis-driven approach (Fisher, 2012). Sarasvathy (2001) coined the terms “effectuation” and “causation” to explain the logic of entrepreneurs. Expert entrepreneurs use effectual logic to make decisions based on what they have at hand, where they rely on their network, while their end goal is not fixed. They perceive challenges as opportunities (Sarasvathy, 2008) - a characteristic also identified as part of a ‘growth mindset’ by Neck *et al.* (2018, 221). The entrepreneurs following a causal logic prioritised knowledge and prediction to minimise risk, whilst the entrepreneurs following effectual logic decided what they were willing to lose, rather than focussing only on the possible gains (Sarasvathy, 2001). Designers and entrepreneurs share many traits, such as empathy (Neck *et al.*, 2018), an explorative mindset (Moller, 2013; Gunes, 2012), resourcefulness and creativity (Frederick *et al.*, 2013), a hypothesis-driven approach and working with given means (Sarasvathy, 2008) and bricolage (Baker and Nelson, 2005).

### ***The thinking of designers***

Cross (2011) studied designers' behaviour to understand how designers approach problem finding and problem-solving. He highlighted that the more designers develop the product, the more they understand the problem. Schön (1987) explained design as a reflective practice, referring to design as an activity that involves reflection-in-action and knowing-in-action. The generation of knowledge for designers is a hands-on interaction between doing and learning.

Owen (2007) classified individuals as *makers* or *finders* depending on the content and the process, which they use to generate knowledge. The makers, also known as inventors, are driven by the

synthesis of ideas and their transformation into new concepts, products, patterns, or constructions; the finders research specific areas to advance their knowledge and make discoveries. In this cycle, knowledge is used to produce work and work is assessed to produce knowledge (Shute,2012). Based on Owen’s (2007) theory, Figure 2 shows a vertical axis dividing the analytical (finding) process and the synthetic (making) process. A horizontal axis divides the figure representing the symbolic and the real context. The symbolic side relates to the representation and construction of abstract ideas, while the analytical side refers to the use of logical reasoning. Areas of knowledge in the upper half of the map are more concerned with the abstract, symbolic world and communication. Fields in the lower half are concerned with the real world, the artefacts and the systems necessary for managing the physical environment.



*Figure 2. The entrepreneurship discipline added to the map of fields created by Owen (2007).*

Designers (design field in Figure 2.) tend to work mainly in the synthetic-real bottom left quadrant (but not exclusively). Artists (art field in Figure 2.) incline to work more in the symbolic-synthetic



upper left quadrant. Entrepreneurs (entrepreneurship field in Figure 2.) work predominantly in the bottom quadrants. Art and design education share an affinity for studio culture, divergent thinking, aesthetic studies, stimulating creative approaches, encouraging the acquisition of independent judgement and critical self-awareness (Souleles, 2013) — practices in the synthetic side. However, the attention of the design professions has long been directed at very real problems and opportunities to bring new products to market. Therefore, designers are closer to product innovation than artists, for example. The repeated cycles of creation and testing in design moves back and forth from the synthetic-symbolic to the synthetic-real quadrant. Compared to artists, the designers carry more responsibility for materialising their proposals within commercial and technical constraints and in the context of mass manufacture, where the impact of their decisions is amplified. Despite evident strengths in the analytical-real domain, the public identity of the design discipline continues to be characterised by its emphasis on the creative and visual elements. As a result, although Owen asserted that novel ideas can happen in any of the quadrants, the underlying doctrine around the designer as a creative, or the designer as a maker, makes it harder for designers to embrace the value of more systematic and analytical approaches.

Owen's characterisation of designers as makers can be related to the cognitive ease of designers. Cognitive ease refers to how easily someone's brain can process information; it does not require extra attention, or extra mental work. Conversely, cognitive strain requires more attention, forcing the mind and making it work harder (Kahneman, 2011). Cognitive ease impacts how someone feels about new information or activities (Schwartz and Cuadros, 2017).

## **Research methodology**

Grounded Theory is a methodology to approach qualitative research, focusing on creating

frameworks and theories based on an inductive analysis of the data. This methodology is appropriate when little is known about a phenomenon. The aim is to develop a theory on a subject grounded in the data (Glaser and Strauss, 1967). To develop a new theory, the researcher does not begin with previous research on the topic to avoid biases. This method consists of a systematic approach to inquire about reality by constructing a new theory that emerged from the data.

The Constructivist Grounded Theory (CGT) utilises the Grounded Theory rules and treats them as flexible guidelines, allowing multiple realities and the researchers' subjectivity to the study (Charmaz, 2000). The multiple perspectives create a context that makes the “theory richer and more reflective of the context in which participants are situated” (Mills et al., 2006, 28). CGT encourages the researcher's previous exposure to the available literature and the use of theoretical frameworks to guide the development of research for novice researchers (Nagel et al., 2015). CGT encourages the researcher to research beforehand and be flexible in the data generation model, asking off-script questions and bringing spontaneous reflections to the interview. Constructivism acknowledges that the researcher's interpretation of the studied phenomenon is itself a construction (Charmaz, 2006).

The CGT provided a research method consistent with the study's purposes and conditions because: a) it acknowledged the research team's previous experience (in design and entrepreneurship); b) it was also more interested in “the views, values, beliefs, assumptions and ideologies of individuals than on the methods of research” (Creswell, 2013, 87); therefore, it could be used to understand the mindset transition of D-es; c) it allowed multiple perspectives on the research topic; therefore the voices of academic experts in design or entrepreneurship, investors and Non-Designer-entrepreneurs (N-D-es) could also be considered to understand the entrepreneurial journey of designers. d) it was more responsive to new insights and emergent questions, since simultaneous

data generation and analysis have an immediate impact on the research (Charmaz, 2006; 2008).

### ***Research method***

An analysis of relevant literature on design and entrepreneurship preceded two phases of data generation. The first phase of data generation explored five broad groups of the supporting environment of D-es (academics, investors, D-es, N-D-es, heads of e-commerce and a crowdfunding company), to have a more rounded vision of the design entrepreneurship situation. These participants provided the context to the study. The second phase of data generation focused specifically on designers and their transition to becoming entrepreneurs. For the trustworthiness of the study, the authors of the study followed up the approach of design entrepreneurs from phase two, one academic expert in entrepreneurship and one product design manager expert in NPD.

### ***Sampling***

Contemporaneous with the primary research, a design investment fund and an influential design charity in the UK held two entrepreneurial competitions for product designers. These organisations supported the lead researcher, acting as intermediaries to recruit participants for phase one. They also helped with the referral of e-commerce and crowdfunding platforms oriented to product design. Participants in this study were contacted via email and digital social media platforms such as LinkedIn. The criteria for this phase looked for members of the entrepreneurial supporting environment for designers. To be included, participants had to be working in tangible product start-ups and have experience with either NPD or NVC. Table 1. presents a summary of the interviewees in the two phases of the study.

For the second phase of data generation, seven D-es from phase one remained in the study. The

criteria for phase two looked for D-es working in a product-based start-up (tangible product), with at least one product in the marketplace at the time of the interview. Consequent follow-up interviews with the participants after the initial engagement were held to confirm theoretical saturation and trustworthiness.

Table 1. List of interviewees from phase one and phase two.

Study phase	Number of participants	Role	Data generation method
One	4	Academic experts in design	A semi-structured interview, including relevant off-script questions and spontaneous reflections.
	11	D-es	
	7	Academic experts in entrepreneurship	
	4	Product-oriented investors	
	4	N-D-es	
	5	Heads of incubation and acceleration programs	
	1	Head of a crowdfunding platform	
	1	Product Design Manager	
Two	7	D-es	A semi-structured interview focused on the entrepreneurial journey followed by a visual map of milestones and a think-aloud protocol.

Table 2. presents the details of the designer-entrepreneurs in the whole study.

Table 2. The Designer-entrepreneurs in the study.

Industry	Years in business
Founder of a kitchenware company	20
Founder of a housewares company	20
Founder of a baby product company	2
Founder of an IoT product design company	7
Founder of a design studio and product company	1

Founder of a product design studio	0.5
Founder of a bike accessories company	4
Founder of a baby incubator company	1.5
Founder of a training shoe company	5
Founder of a furniture company	7
Founder of a tablet accessory company	3

### ***Data generation methods***

#### *Phase one*

Based on DECPI typology, phase one of the study created a semi-structured interview model to understand the latest insights into design and entrepreneurship from participants from the entrepreneurial supporting environment for designers. It also aimed to understand the first-hand experiences of the D-es themselves.

Key sources of insight in the first phase were those participants within the entrepreneurial supporting environment for designers, who had observed people from a range of backgrounds through their entrepreneurial journeys. For example, one participant had collaborated with entrepreneurs in the product realisation stage of their journey. He had collaborated with several D-es and N-D-es. Similarly, some of the investors in phase one had the advantage of having been funded and been able to observe the contrasts in the approach of these diverse types of entrepreneurs.

#### *Phase two*

Two semi-structured interviews in phase two were conducted focusing on the entrepreneurial journey of each designer. In a subsequent meeting, a visual map of product and start-up milestones was carried out to know more about the sequence of events in their journey. At the same time, a

think-aloud protocol (Ericsson and Simon, 1980) brought more reflection and clarity into what occurred at each stage in their journey. The visual map (left-hand side of Figure 3.) consisted of 24 possible milestones describing the NPD and the NVC. These milestones came from the combination of the elements of the eight innovation processes from Salerno (2014), the lean start-up methodology (Ries, 2011), the start-up evolution curve (Jonikas, 2017) and the pre-production milestones of manufacturing products (Henning, 2020). The right-hand side of Figure 3 shows the result of the activity.

The participants were asked to connect the events in chronological order while they verbalised their decisions, achievements, pivots, iterations, and challenges in their entrepreneurial journey. The gathered data was summarised in a timeline to visualise the milestones within the entrepreneurial journey. In a consequent meeting, the transcripts and the visual timeline were shown to the participants to confirm that the researcher accurately captured the information. These meetings contributed to the study's trustworthiness. Jacelon and O'Dell (2005) indicated that prolonged engagement with participants improves the study's internal validity. The entrepreneurs each had 4-6 weeks between their first and second (follow-up) interviews, to verify transcripts and ask further questions.



Figure 3. Visual maps of product start-ups milestones (left image shows template and right image shows an example of a completed map during interview process).

### Data analysis

CGT recommends collecting data and its simultaneous analysis before collecting the entire sample, thus enabling conceptualisation of the phenomena (Charmaz, 2008). This approach shaped the type of data needed in the current study and how and when to collect it. Coding and memos were aligned with CGT conventions for the analytical phase (Charmaz, 2008). CGT has two coding levels. Initial coding defined core categories, used grounds to portray people’s actions, and detected relationships between the codes and the larger image of the study. Focus coding used the most significant and relevant codes from the initial codes (Kimani, 2013).

The initial analysis of the transcripts for both phases was conducted line by line with each interview. Each one of the codes was labelled in the initial coding, followed by the focused coding. The first data collection used the DECPI typology as a guide for the inquiry. Whilst many of the emerging phenomena were explained by the typology, some were not, and therefore a range of new codes was used. In phase one, the participants drew a comprehensive vision of the supporting

environment for designers. The data gathered in this phase was broken into individual phrases and coded before integrating the data into substantive themes. A qualitative data analysis software (NVivo) was used to organise, manage, and consistently code the data throughout the analysis.

In phase one, initial coding captured a number of new insights that had not been considered in the theories covered by the DECPI typology. Analysis of data from these particular codes revealed themes addressing the importance of the designer's transformation in the entrepreneurial journey. D-es contended with competing priorities during the progression towards NVC. Their attention to detail, and focus on mastery and perfection of execution was challenged when dealing with business-oriented activities. They tried to balance their propensity to pursue the optimal product with increasing recognition of, and responsibility for, the array of commercial constraints. This change in their mindset was identified as a potentially important finding, indicating a significant subprocess of design-entrepreneurship and the designer's entrepreneurial journey.

In phase two, focus coding allowed the researchers to explore this journey more in-depth with the D-es to reveal more about the role of mindsets. Themes such as Flowing and Crafting comprised the mastering design skills, detail orientation, and aesthetic obsessing codes in the early days of the journey. The 'configuring a product' theme revealed the slight deviation of priorities from doing a personal project to building a product. The 'opportunity building' theme exposed designers' colliding priorities when they realised the product had business potential. The shift in priorities made evident the breaking point from product-oriented to business-oriented activities. It comprises codes of acquiring new skills, dealing with uncertainty and confusion, prioritising activities, and listening to clients' feedback. The 'expert designer-entrepreneur' theme revealed the adoption of more business constraints into D-es' design practice at a later stage of the start-up. Codes such as 'leading through design' and 'embracing business' supported this theme. Figure 4



shows an extract of the subprocesses of one of the D-es' journeys, the top row represents the NPD subprocess, the middle row shows the NVC subprocess and the bottom row represents the DMT subprocess. The visual map was reutilised as an analytical tool to help disentangle the three subprocesses.

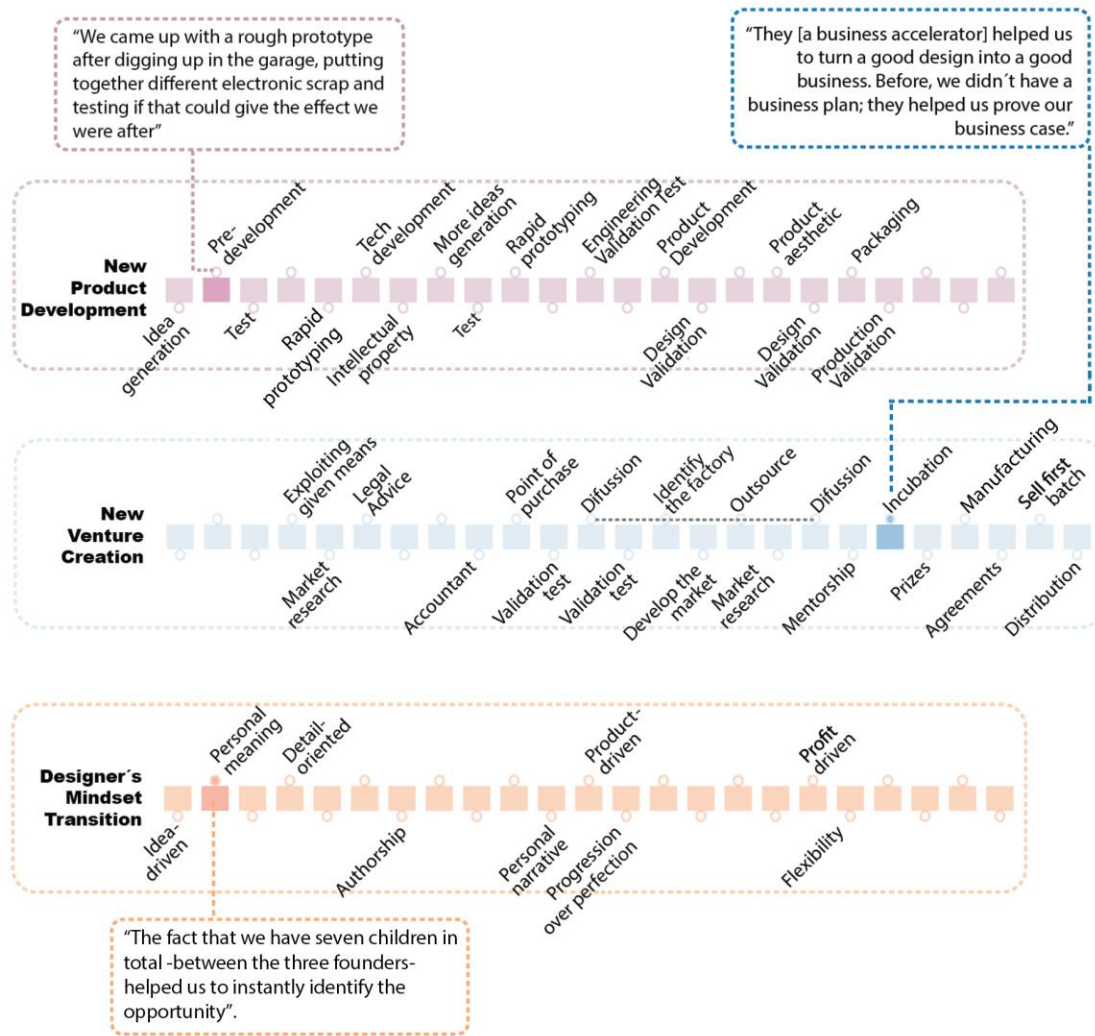


Figure 4. Participant's entrepreneurial journey disentangled into the three subprocesses.

## **Findings**

Evidence in this study has shown that the DMT is an important sub-process in design entrepreneurship. The evidence was drawn from a modest number of interviews and workshops with D-es. Nevertheless, it was supported by evidence from interviews with experts experienced in helping several entrepreneurs from differing backgrounds.

The findings suggested that changes developed in how D-es prioritised competing demands during their engagement with the entrepreneurial process. The D-es gradually adapted their logic, actions, processes, and priorities towards a more business-savvy analysis to grow and refine their business without losing their design intentions for the overall product/business development. When the findings were organised chronologically, they suggested four zones of changing focus necessary to move from conceptual thinking through to the final, commercially oriented decision-making. These four zones were termed mindsets.

### ***The Four Mindsets***

Evidence in the study demonstrated an ongoing transition in thinking experienced by D-es throughout the entrepreneurial journey. Therefore, we proposed four mindsets to represent this transition conceptually. The mindsets defined through this study were labelled as the Artisan, the Configurator, the Opportunity Seeker, and the Design Leader mindsets. The four mindsets were not mutually exclusive, they were symbiotic. However, we suggested that their weightings changed in importance as the commercial activities of the venture developed.

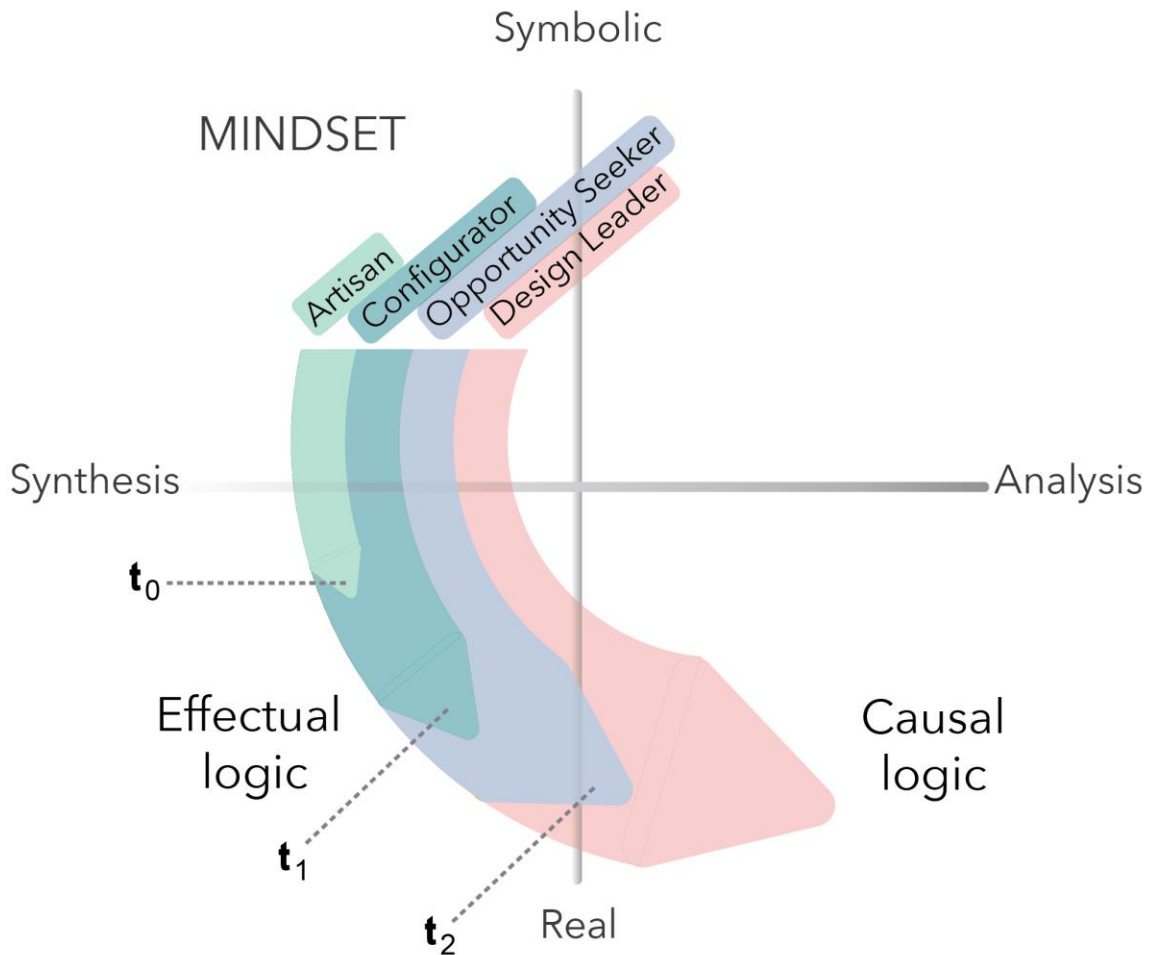


Figure 5. Transitional stages in the Designer-entrepreneur's Mindset delineated by trigger points  $t_0$ ,  $t_1$ ,  $t_2$  (building on Owen, 2007).

### *Artisan mindset*

In the preliminary stages of developing the venture, D-es often invested time and energy sketching multiple concepts, crafting, and honing the product idea before giving thoughtful consideration to potential commercial constraints. Figure 5 illustrates the Artisan mindset, where the D-es' priority was to experiment and become skilful with materials or technologies. It is where playing with innovative technologies and new materials took place, with the designer prioritising the creative exploration of materials, technologies, forms, shapes, textures, and aesthetic properties. Some of

the D-es in the study had minimal evidence that what they were developing would appeal to their anticipated target customer in this early stage. This was contrary to what design thinking claims (start with a deep dive into the user's needs). In this study, the evidence suggested that the designer's sense of purpose or passion led the entrepreneurial path in the early days, not a systematic understanding of users.

### *Configurator mindset*

D-es altered their focus once they realised the potential of the product. Figure 5 shows the Configurator mindset, where the D-es' priority was to find the value proposition and integrate the product into a more extensive system. This mindset is where the configuration of the product and the initial business model was explored. D-es' evident reluctance to explore the business requirements, made them focus on the product's configuration and understanding the problem they were addressing. Some participant D-es acknowledged their primary focus on the execution of their vision without a timeframe. This stage turned out to be critical for attaining coherence between the entrepreneur's aspirations and the product.

### *Opportunity Seeker mindset*

D-es presented a change in the mindset once they decided to develop the business. In the Opportunity Seeker mindset, in Figure 5, the priority was to automate the process to gain speed and attract investment. Flexibility in the management and delegation of the task provided D-es with the advantage of steering the company. The focus was to set up a business capable of growing and competing in a market. In this mindset, the development of the product and the start-up's development happened almost in parallel. The activation of this mindset does not mean the other

mindsets shut down; but they become less of a priority for the DE at that specific moment. The Opportunity Seeker mindset examined every opportunity to increase sales, improve margins, automate processes, reduce waste, and gain access to more money. One of this stage's main objectives was to constantly look for mechanisms that supported the business's growth, such as accelerators and incubators.

### *Design Leader mindset*

D-es' mindset changed after growing the start-up, setting up the basis for scaling up the business. Under the Design Leader mindset, in Figure 5, the start-up focused on increasing their market share, introducing more product range, or diversifying into neighbouring markets. The priority was to have a product-business model that can be replicated or adapted in other countries. There was a virtuous cycle, where the business informs design, and the design informs business. The mindsets build on each other, and avoid conflict by prioritising whether the product decisions affected the business or vice versa. The designer's transformation into a business-savvy entrepreneur reached a new level when designers practised balancing product and business demands. They delegated day-to-day operations of the start-up to concentrate on its strategic direction. It was also evident that D-es drew on their innate user-centricity and their visual and storytelling skills to secure investors and business partners.

Table 3. shows the salient mindset categories and themes coming from phase two of the study.

Table 3. Categories, themes, and descriptions emerging from phase two of the study.

<b>Mindset Category</b>	<b>Theme</b>	<b>Description</b>
Artisan	Flowing and Crafting	D-es found meaning, purpose, and gratification in mastering new techniques, honing their taste, experimenting with new ideas, exploring the boundaries of their skills, and their early objects' characteristics.

	Playing it by ear	They developed the idea based on their likes and needs with no market or business acumen whatsoever. There were no user's needs involved.
Configurator	Killing the darlings	Self-expression was no longer the primary goal. The priority was to design a product, solve a problem and identify the value proposition.
	Configuring a product	D-es focused on the configuration of the product and understanding the problem they were addressing.
	Exploring boundaries	Acquiring new business and management of knowledge was not a priority at this stage, as the trial-and-error approach helped to settle the product's key features and the start-up.
Opportunity Seeker	Gathering resources	D-es now realised the importance of their product/venture, they seek to attract resources to the venture in terms of finance, knowledge, networks, suppliers, retailers, grants, contests, and diffusion.
	Empowering a team	Delegating, results in the D-es sacrificing full control over the product; however, the time and focus gained to boost the venture's performance allowed the entrepreneur to spend more time seeking out opportunities to help the business grow.
Design Leader	Leading through design	Design is seen as a strategic differentiator in the industry. D-es set up a vision about where their product and business needed to be in the future. The lack of confidence in using business language, identified in earlier mindsets was replaced by an effective and confident use of business and technical vocabulary.

*The mindset triggers*

Figure 5 illustrates three triggers (t0, t1 and t2) representing the tipping points between the four mindsets described above. The first trigger (t0) is the transition from the Artisan to the Configurator mindset, expressing the readiness for a change. The second trigger sits between the Configuration and Opportunity Seeker mindsets (t1) and represents the realisation that the product can reach an audience who is willing to pay for it. The third trigger is between the Opportunity mindset and the Design Leader mindset (t2). Designers with this mindset made design decisions based on business performance and metrics. They had a vision for where the business should be in the future.

## **Discussion**

### ***The 'Designers' Mindset Transition' theory***

DMT theory is the explanation of the DMT subprocess. The DMT theory has its underpinnings in the cognitive ease that designers feel about certain activities. Designers in this study tended to focus on the qualities of the artefact, with only cursory consideration of business requirements in the initial stages of their journey. This showed that they moved from an effectual to a casual logic. Existing theories of NPD and NVC do not discuss the disciplinary paradigms of the entrepreneurs they guide, such as priorities, beliefs, preferences but provided a common set of steps for all-comers. As such, the four mindsets and the DMT subprocess described, added an additional third layer of understanding to the current discourse, supporting NPD and NVC. When designers adopted an analytical approach to business without gradually achieving the Opportunity Seeker mindset, the designer's natural flow was interrupted, breaking down the consistency with which designers think and act, referred to as cognitive strain. The transition of the designer's mindset gradually enabled activities, tools, and processes outside of the design discipline, such as business planning, forecasting and finances, referred to as cognitive ease by Kahneman (2011).

### ***Designer's cognitive ease and strain***

As designers moved through the start-up journey, when the decisions had a more significant impact on the company's future. As the risk became higher, there was a greater need for a more structured and systematic approach to set up the business and draw upon opportunities. It is worth noticing that D-es' hands-on nature at the beginning of the start-up clashed with the more analytical tasks required at later stages. Effectuation focused on the controllable aspects of an unpredictable future, and causation concentrated on the predictable aspects of an uncertain future (Sarasvathy, 2008).

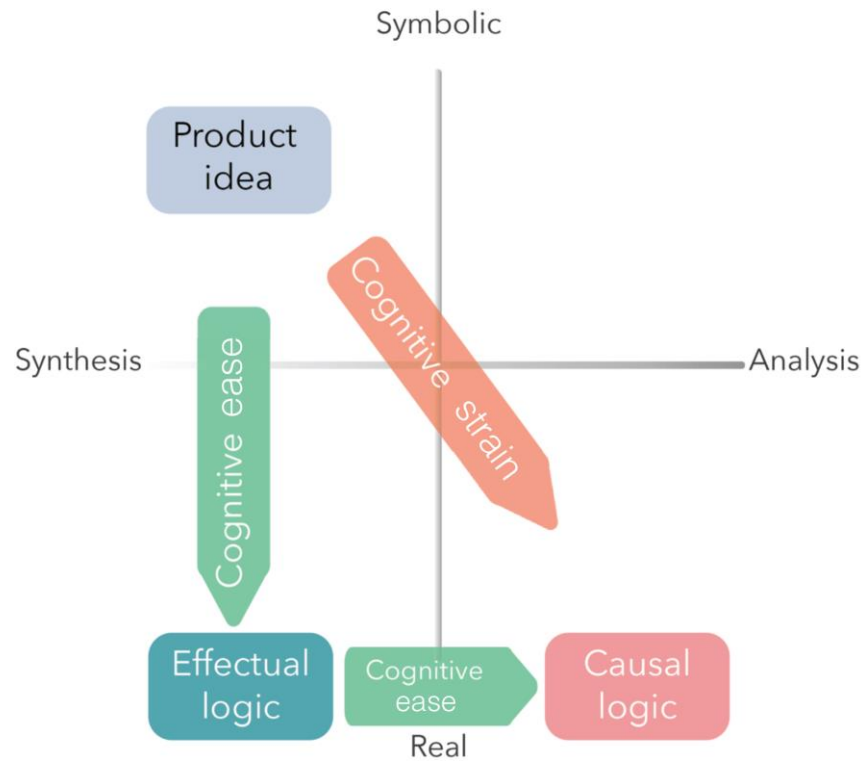


Figure 6. The path of cognitive ease and cognitive strain.

The vertical arrow in Figure 6 depicts how designers find cognitive ease with the effectual logic due to the discipline’s flexible and explorative nature. Conversely, when designers needed a more structured approach to decision-making, there was a mental and physical discomfort shown by the diagonal arrow in Figure 6. Additionally, analytical business decisions and market analysis clashed with the designer’s existing ways of knowing and doing. Causal logic created cognitive strain between the designer’s interests and business needs. It was suggested by the evidence in this study that designers managed to overcome the mental discomfort of the analytical business decisions by gradually evolving their logic from effectual to causal and transforming their mindset from artistic to opportunity seeking. This transition was influenced by the maturity of the business and the ambition of the D-es. D-es in the current study acquired new knowledge in the business domain during the transition from the Configurator to the Opportunity Seeker mindset. Consistently with



Sarasvathy (2008), entrepreneurs sought ways to back up their decisions whenever those decisions could compromise the company's future. In other words, the bigger the business decisions, the more support was required from business tools.

### **Practical implications**

Designers may be experts in developing new products and have a feel for business potential but lack the business focus and acumen needed to realise it. The four mindsets and the transition points described in this study clarified the designer's experience of entrepreneurship. The DMT theory illustrates that designer starting up a company was prone to experience cognitive strain (the reluctance to perform actions outside of their expertise) if they followed a goal oriented and business-driven logic – causal logic (Sarasvathy, 2001). However, the DMT subprocess showed the sequence of mindsets that designers used to gradually migrate their design-oriented focus to an entrepreneurial focus following an experiment-oriented and hypothesis-driven logic – effectual logic (Sarasvathy, 2001). An understanding of the four mindsets can help both prospective and active D-es reflect on their capabilities as potential business leaders. Others in the entrepreneurial support environment and in education will value them as a guiding framework for supporting designers' entrepreneurial journey. This ranges across business-incubators, investors, policymakers, and educators. Larger organisations will find the results of this study and the insights it provides about the four mindsets useful in guiding intrapreneurial behaviours within their in-house creative teams.

### **Limitations of the study and further research**

A limitation of the research is its dependence on the accurate recall of events by the participant D-es. A further longitudinal study, following D-es in real time as they navigate the transitions

described would complement the current research. Now that a framework for the four mindsets of the D-es has been outlined through this qualitative study, a larger scale quantitative approach can follow to engage a wider set of participants and to evaluate the model proposed here.

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## ***Declaration of Interest Statement***

The authors reported no potential conflict of interest.

## ***Tables***

Table 1. List of interviewees from phase one and phase two.

Table 2. The Designer-entrepreneurs in the study.

Table 3. Categories, themes, and descriptions emerging from phase two of the study.

## ***Figures***

Figure 1. The Design Entrepreneurship for Consumer Product Innovation typology (adapted from Valencia et al., 2018).

Figure 2. The entrepreneurship discipline added to the map of fields created by Owen (2007).

Figure 3. Visual maps of product start-ups milestones (left image shows template and right image shows an example of a completed map during interview process).

Figure 4. Participant's entrepreneurial journey disentangled into the three subprocesses.

Figure 5. Transitional stages in the Designer-entrepreneur's Mindset delineated by trigger points t0, t1, t2 (building on Owen, 2007).

Figure 6. The path of cognitive ease and cognitive strain.

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