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RESEARCH ARTICLE

REVISED Design Authorship: an intrinsic driver of designer-entrepreneurs

[version 2; peer review: 2 approved, 2 approved with reservations]

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v2 **First published:** 02 Nov 2021, **1**:133
https://doi.org/10.12688/openreseurope.14148.1
Latest published: 20 Dec 2023, **1**:133
https://doi.org/10.12688/openreseurope.14148.2

Abstract

This paper describes the entrepreneurial journey of product designers and the driver that makes them take an idea into the market. Following a Constructivist Grounded Theory approach, a multiple-phase data generation method explored the entrepreneurial journey of eleven designer-entrepreneurs (D-entrepreneurs). The paper describes the driver named design authorship (D-authorship) and why it is essential in the entrepreneurial journey of designers. The study identified two types of D-authorship: a) the inside-out, where D-entrepreneurs spent considerable time obtaining perfection in the product without any user feedback involved, and b) the outside-in, where D-entrepreneurs build their product as a result of a systematic user-centric approach.

Plain language summary

Product designers are equipped with the right skills and knowledge to create new products. This paper describes the entrepreneurial journey of eleven designer-entrepreneurs starting their product-based companies. However, most of these products never reach the market because of the gap between invention and product launch. This research has identified a critical driver that meant these designers did finally launch products. We call it Design Authorship (D-authorship). The study identified two types of D-authorship: a) the inside-out, where D-entrepreneurs spent considerable time perfecting the product without any user feedback, b) the outside-in, where D-entrepreneurs build their product as a result of a systematic user-centric approach.

Keywords

Design Entrepreneurship, Product start-up, Design Innovation, Design Authorship, Business Innovation.

Open Peer Review

Approval Status ? ✓ ✓ ?

	1	2	3	4
version 2 (revision) 20 Dec 2023		✓ view	✓ view	? view
version 1 02 Nov 2021	? view	? view		

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This article is included in the Horizon 2020 gateway.



This article is included in the Marie-Sklodowska-Curie Actions (MSCA) gateway.



This article is included in the Economics and Business gateway.

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Author roles: Valencia A: Conceptualization, Data Curation, Formal Analysis, Funding Acquisition, Investigation, Methodology, Project Administration, Resources, Supervision, Validation, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing; **Pearce A**: Conceptualization, Investigation, Supervision, Validation, Writing – Review & Editing; **Ryan M**: Conceptualization, Validation, Writing – Review & Editing

Competing interests: No competing interests were disclosed.

Grant information: This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 734824.
The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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How to cite this article: Valencia A, Pearce A and Ryan M. **Design Authorship: an intrinsic driver of designer-entrepreneurs [version 2; peer review: 2 approved, 2 approved with reservations]** Open Research Europe 2023, **1**:133 https://doi.org/10.12688/openreseurope.14148.2

First published: 02 Nov 2021, **1**:133 https://doi.org/10.12688/openreseurope.14148.1

REVISED **Amendments from Version 1**

In this new version, we have addressed all the comments made by the reviewers. The two main changes can be seen in the research methods section and the conclusion section. We have provided a more descriptive narrative of the theory generated and included more details in the implications section.

Any further responses from the reviewers can be found at the end of the article

Introduction

Design thinking has proven its potential to understand the customer's needs, accelerate time to market and reduce the risk of failure, without neglecting aesthetics and customer experience, in business settings (Best, 2011; Borja de Mazota, 2003; Brown, 2008; Design Council, 2018; Ries, 2011). Businesses incorporate design thinking into their teams because it can act as a bridge between different disciplines and their final users (Kelley & VanPatter, 2005) and enhance business performance. Designers tap into empathic tools like personas in order to bring an empathetic compass to the product development process. It has been proven that the use of personas is an effective catalyst for innovation (So & Joo, 2017). According to Dorst (2011, 522) designers have been dealing with "open, complex problems for so many years" that they have developed professional ways to handle them that could be useful for organisations. The design landscape has recently seen a new type of role emerge outside of corporate settings. More designers are increasingly becoming designer-entrepreneurs (D-entrepreneurs) (Colombo *et al.*, 2017; Gaglione & Gaziulusoy, 2019; Mata García *et al.*, 2017) expanding the design discipline's reach. Without business knowledge, design is handicapped to "influence the future directions in production systems driven by market forces" (Teixeira, 2010, 417).

Noumerous approaches have been identified for entrepreneurs to identify opportunities. Lee *et al.* (2020) summarised six ways in which entrepreneurs identify opportunities: find jobs to be done, create mentor and social networks, pattern detection, apply prior knowledge, structural alignment, and hypothesis testing. The goal of design thinking is to identify opportunities from an empathic standpoint with the user at its centre. However, there is no evidence showing how D-entrepreneurs identify opportunities to start a business.

In this paper, we introduce the concept of Design Authorship (D-authorship) and its role in entrepreneurial activities. D-authorship questions whether user-centricity is a characteristic that prevails in the entrepreneurial journey of some designers. There are still presumptions about designers assuming the role of entrepreneurs that have been drawn from the traditional designer´s practice in the corporate setting.

Unlike the lean start-up that focuses solely on customer feedback and market analysis (competitive landscape, market trends and customer needs), the design authorship, as defined at the end of this paper, describes two approaches to customer centricity: firstly, the creation of a product 'outside-in' - based on customer research and iteration based on customer feedback. Secondly, the inside-out process requires designers to lead their product development based on the retro-fit of their own feedback and reflections about the product and its users.

This paper calls into question the expectation that user centricity is used by designers in their entrepreneurial process. It focuses on the concept of Design Authorship (D-authorship) as an intrinsic driver that motivates designers to embark on the entrepreneurial journey.

The main objectives are a) to identify the milestones´ sequence taken by designers in their entrepreneurial journey, b) to stablish whether user-centricity plays a significant role in the decisions and processes throughout the entrepreneurial journey of designers, and c) what is it that drive, inspire and guide them in the entrepreneurial journey.

Literature review - design and entrepreneurship processes

Entrepreneurship encompasses the set of actions, mindsets and processes that enable individuals to turn an idea into a product capable of reaching the market (Carayannis, 2013). Entrepreneurs focus on the value creation and establishment of new business (Lou, 2015), while designers focus on the creation of new products, services, and experiences that will exist and are unobservable (Bonsiepe, 2007; Krippendorff, 2008). Both profiles overlap in their pursuit of novelty, value creation and impact.

To explain the unusual behaviours of entrepreneurs, such as prolonged intense focus, unconventional risk-taking and unwavering belief in personal ideals, researchers have turned to the concept of passion (Cardon *et al.*, 2009). Passion arouses positive emotions in individuals, facilitating new information processing and stimulating the flow state of individuals that ultimately decreases the worry of failure and the awareness of time (Dietrich, 2015). Cardon *et al.* (2009) conclude that positive emotions motivate entrepreneurs to tackle challenges in the entrepreneurial journey. Positive emotions can also be related to the cognitive ease (Kahneman, 2011) experienced by individuals facing a new task. Cognitive ease refers to how easily the brain can process information without requiring extra attention or mental work. Therefore, passion is deemed an important driver of entrepreneurs, facilitating their adaptability to performing new tasks and new challenges, influencing the motivation to continue the entrepreneurial journey.

Bleda, Querbes, and Healey (2021) studied the influence of motivational factors on ongoing product design decisions. They proved that better designs are achieved when designers are motivated by accomplishing a successful innovative design. Designers learn from their customers through empathy, the underpinning principle of user-centricity and customer feedback. Empathy is one of the main principles of Design Thinking

(Selloni & Corubolo, 2017); it connects the researcher, the user and its context, drawing a more thorough understanding of the problem.

"Design thinking is rooted in the principle that to design a great product or service, one must develop empathy for and deep insight into the customer's behaviours and needs. Teams spend time with customers from the beginning of the development process, asking questions, rapidly generating multiple ideas, and testing them. The point is not to validate or prove an idea 'right', but to get instant, unfiltered reaction" (Leichter, 2011, para. 3).

So & Joo (2017) proved that the use of personas (a proxy for the target audience based on user research) increases the originality of ideas in the ideation stage. Also, an empathic approach can help to overcome design fixation when there is a concise and consistent understanding of the user. The available literature on design innovation methods, such as the Design Council framework for innovation (Design Council, 2019) and IDEO's human-centred design toolkit, emphasises the importance of personas in the innovation process.

From the entrepreneurial perspective, empathy has been integrated into existing models of entrepreneurship as user research and customer feedback throughout the development cycle. Methods like lean start-up (Ries, 2011), design venture (Frog Design 2014) and lean design thinking (Müller & Thoring, 2012) claim the importance of the user centricity to increase the chances of commercial success.

Design models. More than a hundred models for creativity, design, entrepreneurship and innovation have been catalogued by researchers (Baregheh *et al.*, 2009; Howard *et al.*, 2008; VanPatter & Pastor, 2016), starting with the Helmholtz description of the creative process (1826) right up to the latest 'design sprint' (Knapp *et al.*, 2016), 'radical innovation of meanings' (Verganti, 2016) and the Design Council framework for innovation (Design Council, 2019).

Howard *et al.* (2008) classified 23 unique design models, identifying six overarching general phases:

- Establishing the needs
- Analysis of task phase
- Conceptual design
- Embodiment design phase
- Detail design phase
- Production, use, retirement

VanPatter & Pastor (2016) classified the last 80 years of innovation methods, identifying four phases:

- Discover and orient
- Define and conceptualise
- Optimise and plan
- Execute and measure

These phases encompass creative problem-solving models and processes in product and service design, organisational and societal innovation. The phases in both classifications resemble to a corporate system, where designers depend on and interact with other disciplines and departments, having a specific role and semi-fixed set of activities. Therefore, designers working within a company cover particular stages of these innovation process. In contrast, designers working solo or for a start-up cover a much more comprehensive range of activities and must cross the disciplinary boundaries of design, adapting to the specific conditions of the new venture.

Design entrepreneurship without a discipline. Nowadays, design practices should move far from linear methodologies (Bremner & Rodgers, 2013) or prescriptive models. Design has shifted from 'disciplinary based' to 'project-based' (Heppell, 2006). Design entrepreneurship requires the designer´s ability to combine ideas and methods from different areas of knowledge and keep themselves in a constant learning loop. Feyerabend (2010) describes the designer's mindset as an 'anything goes' mindset that is not inhibited by well-confirmed theories or established working practices. Certain conditions contribute to this flexible mindset such as advancements in prototyping technology, global connectivity, access to funding via crowdfunding platforms and information accessibility (Valencia Hernandez & Pearce, 2019), facilitating learning through trial and error. According to Kelly & Kelly (2013), prototyping and testing with the user is one of design thinking's key principles, which can reveal problems sooner and enable learning.

It is worth noting that, in this un-disciplined state of loose methods described by Bremner & Rodgers (2013), designers need a compass that helps them navigate through the uncertainty of product development and venture creation. User centricities satisfy this need in product design.However, there is no evidence that this can be applied to design entrepreneurship.

Both entrepreneurs and designers share a focus on novelty, value creation, and impact. While user-centricity is established in product design, its application in design entrepreneurship is an area that requires further exploration. On the same note, cognitive ease associated with passion can motivate entrepreneurs and enhance their adaptability in facing new tasks and challenges. This understanding can inform strategies for fostering learning, training and development of entrepreneurial activities within a classroom, a company or in a start-up. Design entrepreneurship requires a flexible and interdisciplinary mindset, combining ideas and methods from both Design and Entrepreneurship disciplines. Understanding this intersection is crucial for individuals who want to develop innovative products and establish successful businesses.

To record visually the literature review and the information collected from the interviews the research team created a map of doodles (Figure 1). Its function is described in Section 1.2.

Methods

Methodological approach

This study followed the Constructivist Grounded Theory (CGT) approach proposed by Charmaz (2006). This research strategy requires the researcher to come open-minded but not empty-minded. Charmaz's version of CGT encourages the researcher to do research beforehand and be flexible in the data generation model, asking off-script questions and bringing spontaneous reflections to the interview. CGT encourages the researcher's exposure to the available literature and theoretical frameworks, contrary to the conventional Grounded Theory principles of avoiding the literature and conceptual models. CGT uses new insights, emergent questions, and further information to construct not only the method of data generation but also analysing the data simultaneously (Charmaz, 2006; Charmaz, 2008). Charmaz advocates that the grounded theorist can adapt strategies depending on the demands of the study. This strategy allowed insights to emerge, and its flexibility allowed additions and adaptations such as the use of visual prompts in the inquiry, which also enabled the visual analysis of the information.

Research method

*S*emi-structured interviews in phase 1 helped the research team to gain insights into the entrepreneurial journey of designer-entrepreneurs. The researcher recorded the key insights of the interviews, memos, opinions, and visual feedback in doodles to make sense of the information provided by the participants visually. The visual support enabled the D-entrepreneurs to tell stories and be more descriptive in their answers. This tool was critical to discover deeper insights. Researchers note that the use of maps and diagrams can be used as a form of inquiry and as a cognitive tool to improve memory and processing of information (Larkin & Simon 1987; Tversky & Lee, 1998). Visual methods have long been used to generate data in the social sciences (Warren, 2009).

Study participants. In phase 2, the research team selected individuals with experience in design or entrepreneurship, principally from the United Kingdom, as a purposive sampling technique (Robinson, 2014). Three organisations served as facilitators in identifying participants: the research's host university, an influential design charity and a product design investment fund, all in the UK. The participants consisted of four academic experts in design, seven academic experts in entrepreneurship, four product-oriented investors, four non-designer entrepreneurs, five heads of incubation programmes and one head of a crowdfunding platform and eleven designer-entrepreneurs (seven worked as solo entrepreneurs and four were part of a team).

For phase 3, the research team followed up the approach with designer entrepreneurs from phase 2. These participants covered the following criteria: D-entrepreneur, working in a consumer products start-up (tangible products, non-perishables), with at least one product in the marketplace at

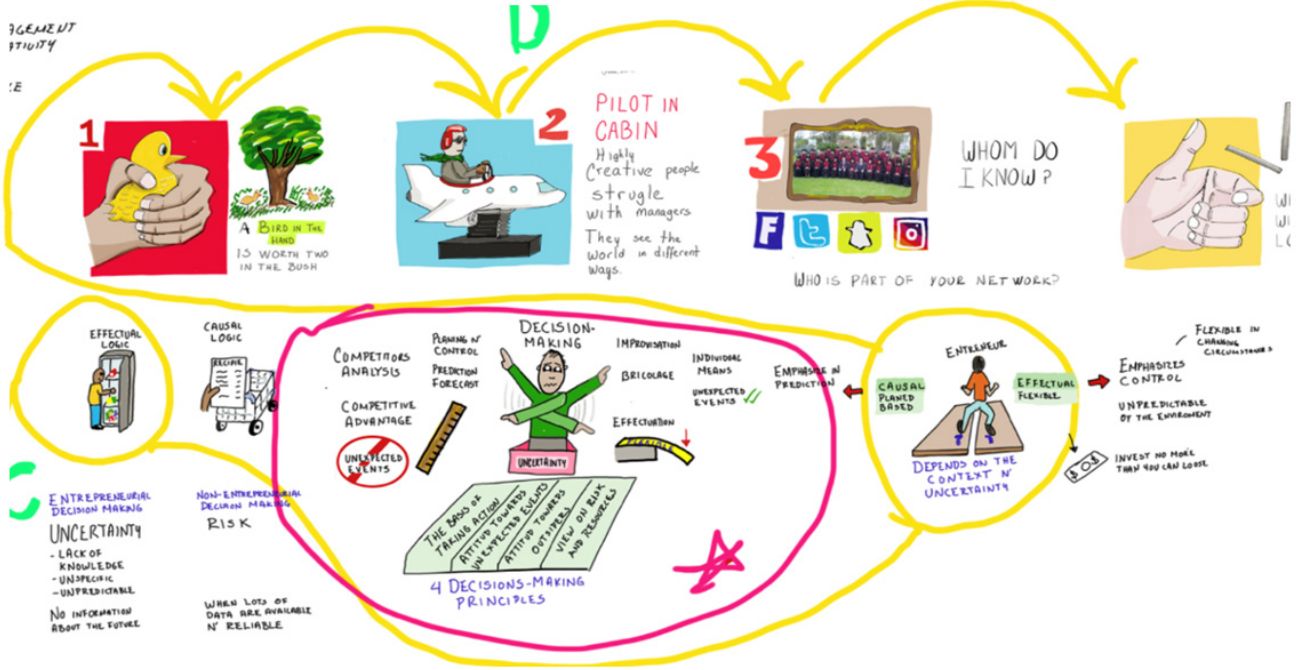


Figure 1. Extract of the doodle map.

the time of the interview. For phase 4, one expert in design, one in entrepreneurship and one in research methods gave their opinions on the findings of the investigation.

The ethics committee of Northumbria University revisited this study to ensure it complied with ethical university policies. The committee granted ethical approval before the data generation phase started. The participants in the study gave written informed consent to the research team at the beginning of the study and verbal consent before each interview.

Structure and data generation methods

The study consisted of four phases. Phase 1 reviewed the available studies in the subject and compiled them in a map of doodles that captured the critical insights of the literature review. Phase 2 consisted of an interview model that explored the relevant areas of the entrepreneurial journey with participants involved in design, entrepreneurship, and innovation. Phase 3 used a semi-structured interview (Valencia *et al.,* 2021) and a visual map of possible milestones, targeted specifically to designer-entrepreneurs to help them describe their entrepreneurial journey. A think-aloud activity accompanied this map to help D-entrepreneurs articulate their key learnings on each specific milestone, the sequence, and the journey's challenges. Phase 4 addressed the validity of the study. These phases are described in detail below.

Phase 1: literature review and respondent recruitment. The research team conducted a systematic literature review to find the commonalities between the 'design approach' and contemporary theories of entrepreneurship. Valencia *et al.* (2018) created a typology of design innovation for consumer product innovation, encompassing relevant theories such as effectuation and causation (Sarasvathy, 2001), bricolage (Baker & Nelson, 2005), strategic design (Calabretta *et al.*, 2016), and design thinking (Brown, 2008). Based on this typology, the study integrated a set of questions into a semi-structured interview followed by a group of activities to generate data. An initial map of doodles was created to document progress in the investigations.

After the first phase, the doodle map evolved with each interview, becoming not only descriptive but also an analytical tool. Additionally, by creating a short voice-over video of the doodle map, the research team was able to attract study participants by creating an compelling visual aid rather than using only a study invitation e-mail. The video was distributed on social media platforms such as LinkedIn and via the personal e-mail system of the principal investigator. The short videos explained the research context, the relevant theories and gaps found in the literature, and why the participants' expertise was needed to fill the missing gaps.

Phase 2: interviews. For phase 2, an interview model was created based on the findings of the literature review in phase 1. The semi-structured interviews enabled an understanding of the opinions and experiences of individuals related to design, entrepreneurship, and innovation in the UK ecosystem. Based on these interviews, the doodle map created in phase 1 evolved with each subsequent interview/encounter; it became a depository of the new insights and findings of the study. The flexibility in the research process opened further inquiries. The iterative approach followed in data generation during phase 2 enhanced the construction of the think-aloud protocol (Ericsson & Simon, 1980) and milestone map used in data generation during phase 3.

Phase 3: think-aloud milestone map. Using the think-aloud protocol tool developed by Ericsson & Simon (1980), the research team asked participants to describe their entrepreneurial journey using a visual map, to expand on the data generated in phase 2. Phase 3 of this study was conducted at least one month after completion of phase 2, to allow participants to reflect on their entrepreneurial journey. For this phase, the research team created a visual map of 24 entrepreneurial milestones, formed using a combination of the elements of the eight innovation processes from Salerno *et al.* (2015), the lean start-up methodology (Ries, 2011), the start-up evolution curve (Jonikas, 2017) and the pre-production milestones of manufacturing products (Miller, 2016). The study utilised this map to allow D-entrepreneurs to recreate their journey in a think-aloud protocol activity. The participant had to connect the milestones chronologically while verbally describing each milestone's challenges, decisions, and learning opportunities. Table 1 shows the combined milestones of the entrepreneurial journey, compiled by the authors based on Jonikas (2017); Miller (2016); Salerno *et al.* (2015) and Ries (2011), and used to build the visual map for phase 3 of the data generation.

Phase 4: the reliability of the study

To demonstrate the reliability of the study, the research team followed the recommendations of Charmaz (2006); Moerman (2016); Shenton (2004); Sikolia *et al.* (2013), conducting activities for internal and external validation. To secure a code-recode strategy, the researcher conducted two coding processes, separated in time to allow the 'gestation period', and then compared the results. This activity was carried out using a small sample of data. The transcripts of the interviews were shown to the participants for their approval. To secure stepwise replication, the researcher asked four external researchers to analyse the same data, noting a slight discrepancy between the data and the codes that emerged from the research team analysis. For the peer examination, the principal investigator actively participated in seminars and presented this work among researchers to receive feedback about the process and findings of the study. Expert external design researchers performed an audit trail on the research and its conclusions; they had access to the raw data, memos, and evidence to track any decision made by the researcher. To comply with the external validation, the researchers created a diagram summarising the insights and the milestone sequence expressed in phase 2 and 3 by each of the participants, and then showed it to the three experts in business, design, and research methodology, respectively, to hear their comments on the investigation and the relevance of the findings.

Table 1. The milestones of the entrepreneurial journey visual map (compiled by the authors based on Jonikas, 2017; Miller, 2016; Salerno *et al.* (2015) and Ries, 2011).

Milestones	Description
Idea generation	Considered as the systematic search for new product ideas (Law, 2009), yet it can be unsystematic or spontaneous.
User research	The research concentrates on user behaviours, needs, and motivations through observation techniques, task analysis, and other feedback methodologies (Goodman *et al.*, 2012; Ries, 2011).
Product dev.	It consists of turning a prototype or concept into a workable market offering (Rouse, 2019). This milestone can extend in time, it is expected that the participant shows the starting and ending point.
Funding	This stage provides financial support to start-ups to finance the project.
Rise capital	This stage refers to the money obtained externally to get the business off the ground and help the daily operations.
Validation	The validation indicates the assessment of the idea, product or the start-up and acceptance from potential customers (Ries, 2011).
Crowdfunding	In this research, crowdfunding is a way to raise finance from a large number of people, typically using an online platform, where the project is subject to pledges (Kurani, 2021).
Pivoting	Pivot refers to more substantive iteration (Ries, 2011). This stage refers to the abrupt change that companies may make to their business model, in response to or in anticipation of a change in the market.
Minimum viable product (MVP)	The MVP allows the start-up to collect feedback and validated learning from customers with the most reduced version of a product (Ries, 2011).
Mentorship	The mentorship stage is when a mentor influence, guide, or directs the designer-entrepreneur (Jonikas, 2017).
Diffusion	The diffusion stage refers to the communication process in which the entrepreneurs explain their ideas, information, product and start-up to their community or society (Salerno *et al.*, 2015)
Wait to develop the market	The entrepreneur decides to stop other areas of the business to develop the existing market rather than looking for a new market (Salerno *et al.*, 2015).
Wait to develop the tech.	The entrepreneur decides to stop other areas of the business to develop the technology by systematic use of scientific, technical, economic, and commercial knowledge to meet specific business objectives or requirements (Salerno *et al.*, 2015).
Outsource	This stage indicates the practice of subcontracting another company to perform services and create goods that cannot be performed in-house.
Manu-facturing	This stage points out the process of converting materials, components, or parts into the finished product (Miller, 2016; Salerno *et al.*, 2015).
Sell	This milestone indicates the exchange of money for the final product. It can be online, in a departmental store or in an independent store.
Distribution	This stage is representative of the milestone of moving the product through a distribution channel to the final customer, customer, or user (Salerno *et al.*, 2015).
Intellectual property	This milestone represents the need to protect the creative idea from entrepreneurs (Jonikas, 2017).
Rapid prototyping	Designers utilized sketches, tangible models, or computer-generated models to configurate a rough-and-ready prototype (Ries, 2011).
Market research	This milestone refers to the activity of identifying the size of the market, the user´s unmet needs, and potential threats for the company, and market opportunities.
Resources evaluation	This research refers to the resource evaluation milestone to the activity where entrepreneurs evaluate tier resources: materials, human capital, tools, and funds.
Engineering validation test (EVT)	EVT evaluates the assembly of the parts for fit and tests the product for function. The hypothesis of the core engineering functions is tested (Henning, 2020; Miller, 2016).
Design validation test	The production line is built and tested. The test covers the production lines and whether or not they are able to produce and end unit that meets all the product requirements (Henning, 2020; Miller, 2016).
Production validation test	At this stage the production line is tested to show how the production process work at scale (Henning, 2020; Miller, 2016).

Data analysis

CGT recommends the generation of data and its simultaneous analysis before collecting the whole sample, thus enabling conceptualisation of the phenomena (Charmaz, 2006). In this case, the map of doodles and the visual memos served this purpose. It is worth noting that the videos where transcribed and the images where labelled by the researcher, making sure to add all the visual cues, describing in detail relevant features and its visual context. The recorded audio from multiple interviews were 46 hrs long in total. There were periods when the researchers analysed the data collected while other participants joined the study. This iterative, parallel process optimised the time and resources of the researchers, and consequently, the conceptualisation of the phenomena became more robust. This conceptualisation brought new questions and reflections to the interviews, making them more dynamic and reflecting the researchers' learnings after each interview. The study utilised NVIVO software to analyse the data, (an open-source option is Google sheets). This platform facilitates the emergent coding, theoretical coding, data analysis, theoretical development, and presentation of findings (Hutchisona *et al.*, 2010). With direct quotes from the data, the researchers integrated field notes and diagrams to correlate and strengthen the credibility of the interpretation of the data (Thomas & Magilvy, 2011; Tuckett, 2005). The coding process followed the recommendation given by Charmaz of using gerunds because they "move beyond concrete statements by focusing on actions rather than themes" (Charmaz, 2014, 111).

Results

In CGT, data generation and analysis take place simultaneously. Therefore, in this paper, the ongoing findings are reported as a continuum.

In phase 1 and phase 2, the research team summarised the findings in a map of doodles. The principal investigator created this map from the literature review (phase 1), and then it was subjected to changes during and after each interview (phase 2). It was used as a descriptive tool and research prompt, as well as an analytical tool. The voice-over video was created to disseminate the latest findings and to invite participants to the study via social media. This video showed participants the connections between the key concepts and the emergent findings of the inquiry. Participants reported that reviewing the doodles was more appealing than reading written reports, as it let them make sense of the entire scope of the research.

Figure 2 shows the visual milestone activity in phase 3. The imagery had to utilise colours, shapes, and simple forms to allow the participant to focus on recalling their process, instead of reading the definition of each.

Figure 3 shows examples coming from the D-entrepreneurs in the study. It is worth noting that each entrepreneurial journey differs from each other. In a subsequent meeting, the results were shown to the participants to collect their impressions and compared the accuracy of the data generated.

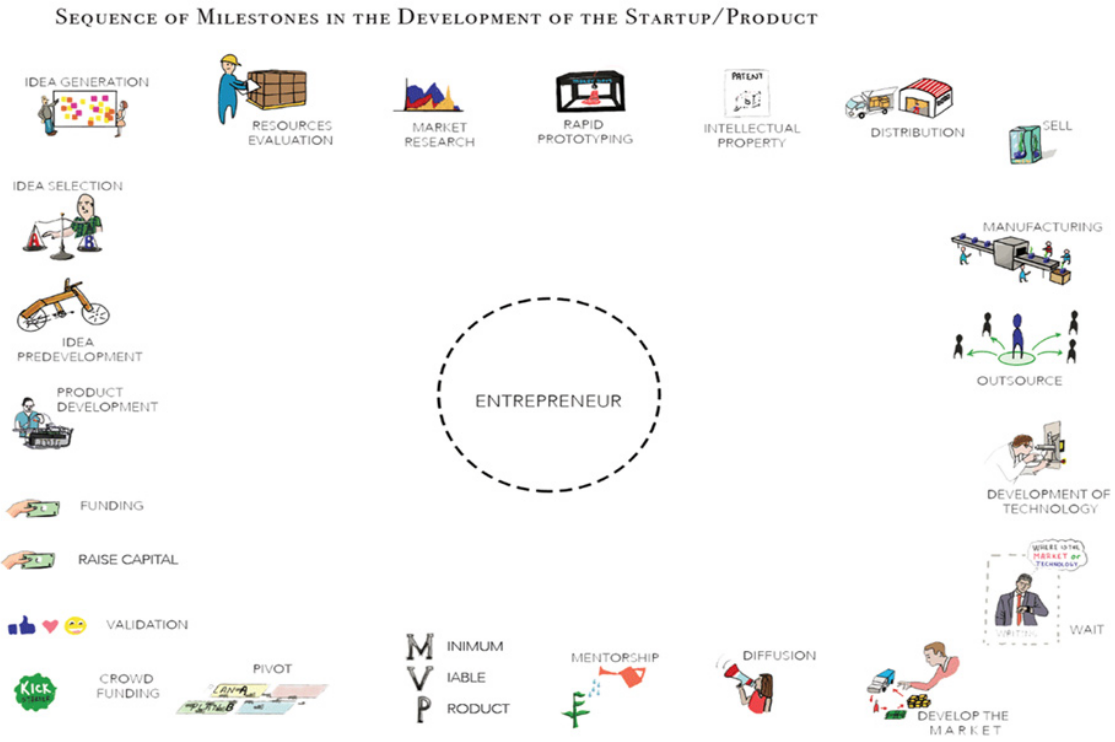


Figure 2. Visual entrepreneurial milestones activity.

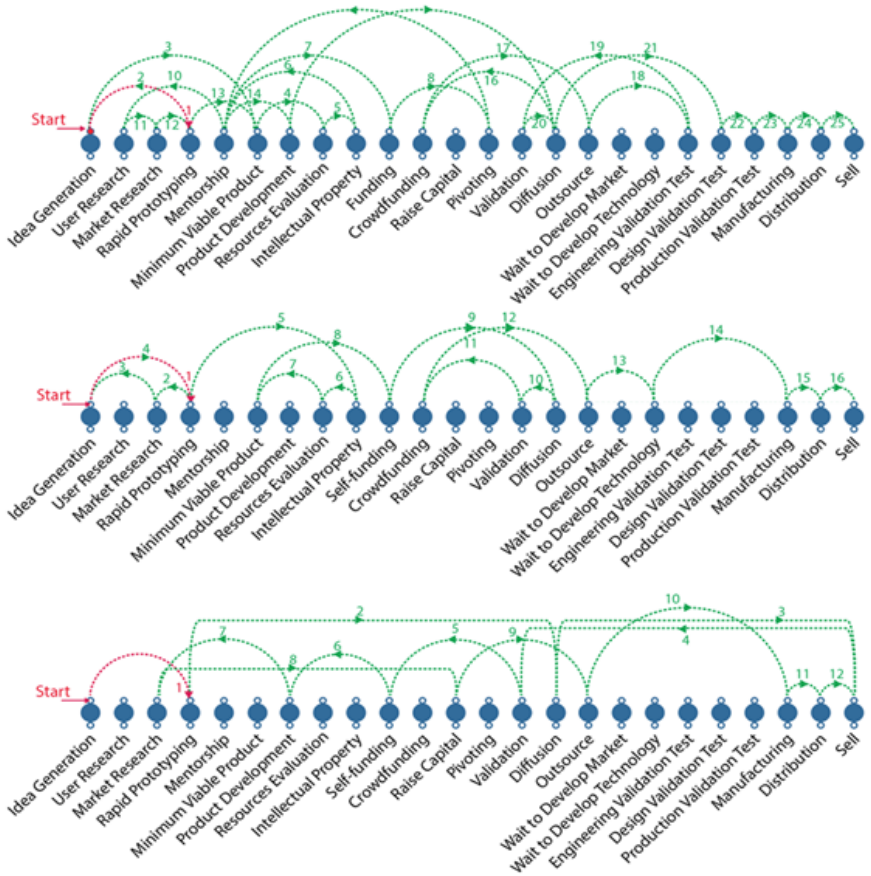


Figure 3. Exploded view of the milestone´s sequence of the three d-entrepreneurs´ journey.

There was no consistent milestone sequence among all participants. The only clear pattern was that seven of 11 D-entrepreneurs started their company without following any user-centric method or business plan. One participant asked for feedback for the first time only after one and a half years of product development. These designers were driven by their intuition, their convictions, and their beliefs. The opportunity seemed to be revealed to them while they sketched concepts, explored modern technologies and new materials.

To an extent, they represented the lead user as a source of innovative progress described by Von Hippel (1986) since they had needs ahead of any existent trend and pursued a benefit by obtaining a solution to that need. However, there was a hidden motivation that related to the act of doing, making, and creating. The data obtained suggested something was leading designers towards building personally driven products, regardless of the market, the user insights or if the technology had been proven.

Codes, categories, and themes

Multiple themes emerged from the data analysis highlighting the subprocesses of the entrepreneurial journey, the challenges, and the lessons learned. However, this paper will focus on the theme 'authorship', considered to be the most relevant for the study. In Table 2, a breakdown of the authorship theme is presented.

Conclusion

The D-entrepreneur´s authorship theory

The authors posit a new concept, 'Design Authorship' (D-authorship), as an intrinsic driver that motivates designers to take the leap into the entrepreneurial journey regardless of user research, marketing study, or any predicted commercial success. A designer-entrepreneur's authorship is divided into three components that are complementary and not mutually exclusive: craft, design and art (Valencia Hernandez & Pearce, 2019). Evidence in this study shows that some d-entrepreneurs replace user-centricity with their personal ethos, needs and aspirations as a key driver of the entrepreneurial journey.

The art component of D-authorship portrays the philosophical stand of the entrepreneur. It does not follow any external brief and is mostly based on the D-entrepreneur's context and personal values. The product/start-up satisfies the designer's emotional needs, providing meaning and alignment to their values and context, it reflects a deeply personal and introspective approach to design. The context for this component is when

Table 2. The authorship categories and gerund codes which emerged from phase 3.

Theme	Category	Gerund Codes
Authorship	Quality, merit and aesthetic obsession	Focusing on details Perfecting over progressing
	Identity	Believing and valuing Telling credible stories Motivating inner self
	Design acumen	Savvy audience criticizing Legitimatizing Empathizing systematically

designers seek to express their unique perspectives, unconstrained by external briefs. This component of D-authorship aligns with the concept of intrinsic motivation in psychology (Deci & Ryan, 1985), as both emphasize self-expression and personal values. In this component, designers prioritise their personal ethos over the market success, this idea is in line with what Bell *et al.* (2019) describe as "craft work", where it is a form of identity practice that involves entrepreneurial risk-taking and often blurs the boundaries between work and leisure, providing individuals with a sense of identity and meaning in their work.

The design component of the D-authorship seeks alignment with brand values, follows an external brief, and pursues social validation. The client/user needs are at the forefront of their concerns. It prioritizes the relationship between design and market needs. The context for this component is when designers work on projects requiring conformity to external guidelines, brand identities, and when seeking widespread acceptance in the marketplace. This component of D-authorship correlates with the marketing concept, which emphasizes satisfying customer needs and achieving market success (Kotler *et al.*, 2016).

The craft component of the D-authorship concentrates on the designer's attention to the mastery of execution, the aesthetic response and the merit attained by the skills and taste of the designer. Design flair and good taste reside within this component. It places a premium on the quality and craftsmanship of the design, aiming for excellence. The context for this component is when designers focus on perfecting the execution of their work, seeking aesthetic appeal, and gaining recognition through their skills and craftsmanship. Craft authorship is related to the concept of mastery in skill development (Ericsson *et al.*, 1993), emphasizing the deliberate practice required for expertise.

These three components of design authorship remain consistent throughout the theoretical argument, reflecting the designer's internal motivations (artistic), dedication to craftsmanship (craft), and market-oriented considerations (design). They align with psychological, skill development, and marketing theories, providing a comprehensive framework for understanding the multifaceted nature of design authorship in entrepreneurial contexts.

Inside-out authorship (The Geppetto Effect). Seven of eleven D-entrepreneurs in this study conceived their products as an extension of who they were, passing on the beliefs and capabilities as designers to the products they created. This phenomenon has been named 'The Geppetto Effect' (Valencia Hernandez & Pearce, 2019). The D-entrepreneurs spent considerable time in expressing perfection, diligence and a need to achieve a sense of authorship through the purpose and characteristics of the product. This ongoing search for perfection slowed the entrepreneurial venture, but it gained authenticity, which later on was needed to appeal to potential users. Shown on the left-hand side of Figure 4, where the D-entrepreneur´s values shape the object and the company, this process is more intimate with the individual ethos. Accornign to Fayard *et al.* (2017) this idea of ethos and values are important for establishing legitimacy, particularly when they are intertwined with material practices. The D-entrepreneurs under this effect took each product decision very carefully. They worked hard to achieve alignment or coherence between the product and their vision and intent. In effect, this was an inside-out process since these designers created items that were meaningful to themselves.

D-entrepreneurs spent more time finding the solutions within themselves, crafting the product up to a point to transfer their identity to the object. This type of authorship represents a mixed blessing, where the designer's search for perfection and attention to product detailing hindered the start-up's progress. However, designers with this type of authorship achieved outstanding recognition from their communities. There is an evident coherence between 'the ethos' of the product, the start-up and the 'mastermind' behind them. It is worth noting that D-entrepreneurs with artistic authorship considered their peers (knowledgeable designers) to be their audience. Multiple contests and prizes, even recognition from international authorities in the design discipline, helped them to build a good reputation even when sales were scarce.

Outside-in authorship (The Shoemaker Effect). The second type of authorship describes when a product results from a systematic process such as design thinking. In this case, D-entrepreneurs play the role of interpreters, collecting information about needs and opinions to form a better understanding of the problem and the potential for future solutions. The researchers called this 'the designer´s authorship' as shown on the right-hand side of Figure 4. In this process, the answer comes from the users and the designer´s ability to synthesise abstract information and configure a solution. This is an outside-in process, where the information and validation come from the outside world. This authorship appraises viability, desirability, and feasibility, which accelerate the development process. This study calls this effect as 'The Shoemaker Effect' from the Brothers Grimm fairy tale 'The Elves & the Shoemaker (first published in 1812). In it, elves secretly collaborate to make shoes that appeal better to customers for the shoemaker to sell. Shoemaking is a user-driven activity that builds on a bespoke solution that fits the customers' needs and desires.

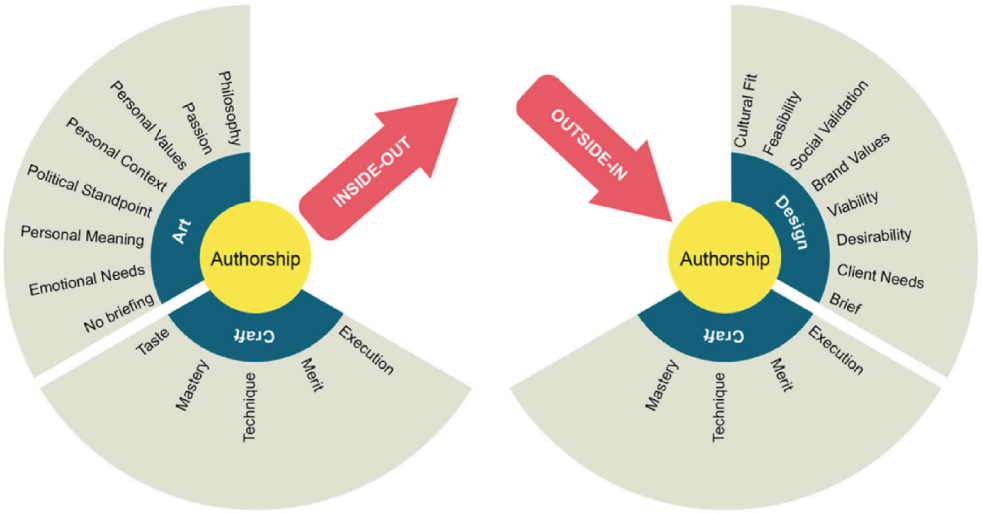


Figure 4. On the left-hand side, the inside-out authorship called the Geppetto Effect; on the right-hand side, the outside-in authorship called the Shoemaker Effect.

The sense of authorship has not been covered in entrepreneurial studies. Craftspeople, artists, and designers express their thoughts by creating. This study refers to the sense of authorship to the creators´ signature that represents a potential legacy, tradition, or reputation.

Design authorship describes the intrinsic motivation of designer entrepreneurs, and it relates to the concept of entrepreneurial agency McMullen, Ingram, and Adams (2020), a concept that refers to the entrepreneurs' independence, courage and initiative. It is worth nothing that entrepreneurial agency does not describe the steps followed by designers to gain motivation.

While Cardon *et al.* (2009) established that there are three distinctive entrepreneurial passion role identities, inventor, developer and founder. Design Authorship relates to the inventor's entrepreneurial passion identity. Overall, D-authorship expands the understanding of entrepreneurial passion by emphasizing the unique motivations and drivers of designer-entrepreneurs, providing insights into their intrinsic desires, and highlighting the interplay between personal values, aesthetics, and the pursuit of entrepreneurial success (Cardon *et al.*, 2009; Lee & Herrmann, 2021). In his seminal work about the reflective practitioner, Schön (1983) describes the concept of situational backtalk. This concept refers to the conversation that the designer has with the materials. Situational Backtalk, within the realm of design, encompasses a reflective discourse with the challenges at hand, nurturing innovative perspectives. Conversely, Design Authorship (D-authorship) refers to the underlying motivations of designer-entrepreneurs, encompassing artistic, design, and craft dimensions. Commonalities arise in the context of internal dialogues, yet distinctions emerge in their respective focal points: Situational Backtalk engages with problem-solving, while D-authorship delves into the intrinsic motivations and mindset of the designer.

Practical implications

The study of D-authorship can elicit new ways for designers to start a company, without considering user-centric methodologies in the very early stages of the venture. Understanding the 'Geppetto Effect' (Valencia Hernandez & Pearce, 2019) highlights the importance of personalization, attention to detail, and the alignment of the product with the designer's vision. Design Authorship expands the understanding of entrepreneurial passion by recognizing the unique motivations and drivers of designer-entrepreneurs. This insight can help researchers, educators, and practitioners provide tailored support and resources to nurture and enhance the passion and success of designer-entrepreneurs. Business incubators can rely on the evidence from this paper to further understand the entrepreneurial journey of highly creative individuals. Further research is needed to understand how successful this approach is in non-D-entrepreneurs. D-authorship can also provide guidance in the way design and business schools approach innovation and entrepreneurship. Business schools could learn more about entrepreneurial paths that aren't yet understood by design schools.

Data availability

Underlying data

Due to the commercial and intellectual sensitivity of the data handled in this study, all the interviews, transcripts and memos have been stored on the GETM3 data repository at Northumbria University secure servers, as required by our confidential obligations with the EU Commission.

Any further queries or request to access to the data please contact Dr. Aldo Valencia at aldo.valencia@northumbria.ac.uk The data access request will be assessed by the GETM3

project steering committee to comply with our confidentiality obligations with the EU project guidelines.

Extended data

Figshare: Semi-structured Interview Study DeEntr.docx. https://doi.org/10.6084/m9.figshare.16775719.v1 (Valencia *et al.*, 2021)

This project contains the following extended data:

- Semi-structured Interview Study DeEntr.docx (semi-structured interview model)

Data are available under the terms of the Creative Commons Attribution 4.0 International license (CC-BY 4.0).

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Open Peer Review

Current Peer Review Status: ? ✓ ✓ ?

Version 2

Reviewer Report 05 March 2024

https://doi.org/10.21956/openreseurope.18172.r37526

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Michael G. Goldsby
Ball State University, Muncie, Indiana, USA

The article is very well-written and presents a good topic to explore. The inside-out and outside-in framework is very interesting and worth examining. I think this is a very important question to address in design and related entrepreneurship research. A typology based on design within entrepreneurship is a good contribution on this topic. My suggestions to improve this paper: In the Introduction, you are missing citing Design-Centered Entrepreneurship by Basadur, Goldsby, and Mathews (2022). There is much on the thinking around this blend in that book. In the Introduction, more clarification on why the word "authorship" was used. I'm not clear on that from either a design or entrepreneurship angle. Can you give an example of what Design Authorship looks like. Can the authors provide an example of inside-out and outside-in design to better explain how the idea works. Any research literature on authorship to ground the concept more? Later in the paper, Phase 2: I think more detail on what asked in the interviews would help the reader.

Is the work clearly and accurately presented and does it engage with the current literature?
Yes

Is the study design appropriate and is the work technically sound?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Not applicable

Are all the source data and materials underlying the results available?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Yes

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Entrepreneurship

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 29 January 2024

https://doi.org/10.21956/openreseurope.18172.r37535

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P.J. White
[1] designCORE, Humanities, South East Technological University, Carlow, Ireland
[2] McMaster University (Ringgold ID: 3710), Hamilton, Ontario, Canada

This is an interesting contribution to the area of Design entrepreneurship, and will be of interest to Design and entrepreneurship researchers. Having read through the paper and comments by reviewers I'm satisfied that the previous amendments are complete and improve the paper. Some slight amendments are required (detailed below) and I would strongly suggest a full final proofread to ensure all spellings, grammar and syntax are correct.

Suggested Amendments:

1. In the conclusion I feel the following passage is a main finding of the study and is of importance for future researchers, particularly design researchers:
"Evidence in this study shows that some d-entrepreneurs replace user-centricity with their personal ethos, needs and aspirations as a key driver of the entrepreneurial journey"

However, it gets lost in the current formatting/paragraph. For the ease of the reader, I suggest drawing the reader's attention to it more, either by highlighting it, calling it a main finding etc.

2. Change of spelling/ referencing
Paragraph 2 Change spelling Noumerous to Numerous
Paragraph 13 Helmholtz (1826) needs to be listed in the references?

3. Please conduct final full proof read for further errors.

In conclusion, well done, looking forward to seeing how this research develops.

P.J.

Is the work clearly and accurately presented and does it engage with the current literature?
Yes

Is the study design appropriate and is the work technically sound?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

Are all the source data and materials underlying the results available?
No source data required

If applicable, is the statistical analysis and its interpretation appropriate?
Not applicable

Are the conclusions drawn adequately supported by the results?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Design, Product Design, Design for Ageing, Design Ethnography, Co-Design, Interdisciplinary Research

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 08 January 2024

https://doi.org/10.21956/openreseurope.18172.r36929

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Thomas Cooney
College of Business, Technological University Dublin (TU Dublin), Dublin, Ireland

I have read the revised article and I am satisfied with the changes that have been made.

Is the work clearly and accurately presented and does it engage with the current literature?
Yes

Is the study design appropriate and is the work technically sound?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

Are all the source data and materials underlying the results available?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Yes

Are the conclusions drawn adequately supported by the results?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Entrepreneurship

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Reviewer Report 07 December 2021

https://doi.org/10.21956/openreseurope.15253.r28046

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?

Thomas Cooney
[1] College of Business, Technological University Dublin (TU Dublin), Dublin, Ireland
[2] College of Business, Technological University Dublin (TU Dublin), Dublin, Ireland

This article explores the entrepreneurial journey of product designers to understand the gap between invention and commercialization. Following interviews with eleven design entrepreneurs, the authors develop a new concept called ‘Design Authorship’ (D-authorship) which can either be Inside-Out (design-led) or Outside-In (user-led).

The premise of this paper is really interesting as the gap between invention and commercialization remains a constant conundrum. However, the paper needs to be much more tightly written and more attention needs to be given to the value of the findings.

The following points should assist the authors in the future development of the article:

1. This is a scientific paper and the language used should reflect it. Expressions such as 'go the extra mile', 'tap into', 'that concern with what will exist' and 'right up to' should be be

rewritten to a more formal language.

2. A useful technique when writing an article is to keep asking 'So What?' Having written a paragraph or section, the writer / reader should ask 'so what' to determine what value arises from the information provided. At the end of the literature review, I asked myself 'so what have I learned from the review?' and the answer was unclear. The article did not draw together the main points that had been learned from the review of the literature and how the review advanced the development of the article. For example, would it have been helpful to include a doodle map as was mentioned later in the article?

3. The lean start-up approach by Ries (2011) is very similar to the argument being made in this article about an 'outside-in' approach to design authorship. Therefore, it should have been given specific attention in the literature review and later the authors should have explained the differences between the two approaches.

4. The Research Method section begins with the words 'In Phase 2', but we have not been told previously what is Phase 1. Additionally, we are taken through the four phases in Research Method, only for it to be repeated in more detail in 'Structure and Data Generation Methods'. Furthermore, the article is clearly about the feedback from the eleven design entrepreneurs, so why is there is a need to discuss all the other participants / interviews since none of the information generated from these was actually used.

5. The Conclusion was quite weak and failed to highlight the real value that this work adds to existing academic literature and the implications that it has for practice. There was so much to be written about the practical implications, but only two sentences were given before moving on to the need for future research.

This research and article has the potential to make a really interesting contribution to discussions on the gap between invention and commercialization, but currently it undersells itself by not drawing out more strongly the findings from the research and their implications for practice and theory.

References

1. Ries E: The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses. *Crown Business*. 2011.

Is the work clearly and accurately presented and does it engage with the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

Are all the source data and materials underlying the results available?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are the conclusions drawn adequately supported by the results?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Entrepreneurship

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 03 Nov 2023

Aldo Valencia

Dear Thomas Cooney, College of Business, Technological University Dublin (TU Dublin), Dublin, Ireland

I would like to express my sincere gratitude for the insightful and meticulous review of this paper. Your detailed and constructive feedback has been immensely valuable in refining and strengthening the quality of this manuscript. I appreciate the time and effort you have dedicated to carefully evaluating the content. Please find below the answers of all the comments. Comments and their responses ordered by section of the paper.

Literature Review - Comments/Actions:

- "At the end of the literature review, I asked myself 'so what have I learned from the review?' and the answer was unclear. The article did not draw together the main points that had been learned from the review of the literature and how the review advanced the development of the article. Would it have been helpful to include a doodle map as was mentioned later in the article?"
Response: The conclusion of the literature review section has been revised to offer a clearer summary of the main points derived from the review. Additionally, a brief section has been added to explicitly emphasize the contributions of the literature review to the overall development of the article. Moreover, an incorporation of a reference to the doodle map, described in the Methods and Research Method section, serves to illustrate how it facilitates the visualization of the conceptual framework of the article

- "The lean start-up approach by Ries (2011) is very similar to the argument being made in this article about an 'outside-in' approach to design authorship. Therefore, it should have been given specific attention in the literature review and later the authors should have explained the differences between the two approaches."
Response: A specific section has been included in the literature review that discusses the similarities and differences between the Lean Start-up approach by Ries (2011) and the 'outside-in' approach to design authorship proposed in our article

- "First, contextualize the concept with regards to existing concepts. For example, which concepts are identified as being related to it? This, then, would help the reader better evaluate the novelty of the concept. A better grounding of the concept would also help in creating a more coherent body of knowledge (instead of separate contributions here and there)."
- "The introduction could more clearly state the paper focuses on design authorship – after having finished the manuscript, I realized the paragraph “In this paper, we question…” (p. 3) refers to the concept, but it should be made even more explicit. Right now, the introduction seems rather convoluted with discussions on design thinking, user-centricity, entrepreneurs, and design entrepreneurs (same is reflected in keywords that, after revising the manuscript, could be changed to better reflect the manuscript)."

Response: The section on design authorship in the literature review has been expanded to provide a more thorough contextualization of the concept.
Related concepts and theories, such as design thinking, user-centricity, and entrepreneurship, have been identified, and the way in which design authorship fits within this conceptual landscape has been discussed.
This contextualization enhances the reader's understanding of the novelty and relevance of the concept and contributes to a more coherent body of knowledge.

- "Literature review, then, seems to focus on comparing entrepreneurs and design entrepreneurs (one idea could be to have a table comparing them if this path is what the authors wish to embark on), but this seems to be slightly misaligned with the introduction. In other words, a) what do we know about design entrepreneurs and b) what we need to know more about?"

Response: The need for clarity regarding the focus of the literature review has been pointed out, and in response, the literature review section has been restructured to provide a more organized and coherent discussion. A table has been included that compares entrepreneurs and design entrepreneurs to highlight their similarities and differences, addressing what is known about design entrepreneurs and emphasizing the aspects that require further exploration. This revision ensures better alignment with the introduction and addresses the concerns raised by the reviewer about the article's direction.

Research Methods - Comments/Actions:

"...Method, only for it to be repeated in more detail in 'Structure and Data Generation Methods'. Furthermore, the article is clearly about the feedback from the eleven design entrepreneurs, so why is there a need to discuss all the other participants / interviews since none of the information generated from these was actually used."

Response: The Research Method section provide a more concise and focused overview of the research methodology. Constructivist grounded theory requires the inclusion of different voices related to the subject of study.

- "The Research Method section begins with the words 'In Phase 2', but we have not been told previously what is Phase 1. Additionally, we are taken through the four

phases in Research."
Response: The research method section has been updated to provide a clear introduction to Phase 1 and a brief overview of the four research phases at the beginning of the section. This provides readers with a better understanding of the research process.

- "Visuals, for instance, could be made smaller and some of them could perhaps even be removed (e.g., figures 1 and 2)."
Response: The former figure 1 has been removed. The removal of this image does not compromise the clarity of the section.

- "The method section could benefit from expanding it a bit whilst mostly focusing on making it more condensed (I know this is paradoxical, but I will suggest next how this could be achieved). For example, Table 1 could be moved to the Appendix, while Phase 1 could potentially be removed since that should be covered in the literature review section."
Response: Moving Table 1 to the Appendix is a reasonable suggestion to streamline the main text. However, it compromises the clarity of this section. The reader needs to see the concepts included in the milestones od the entrepreneurial journey included in the visual activity for data collection.

- "If the paper deals with multimodal data (as it seems to be given that both visual and verbal data was collected), data analysis could be more robust in showing how multimodal data was analyzed."
Response: Constructivist Grounded Theory allows the analysis of multimodal data, integrating textual, visual, and auditory information to conduct the phase analysis. The activity milestones show the sequence of events that the entrepreneurs followed. So we treat this visual aids as prompts for the main interview.

Conclusion - Comments/Actions:

- "The Conclusion was quite weak and failed to highlight the real value that this work adds to existing academic literature and the implications that it has for practice. There was so much to be written about the practical implications, but only two sentences were given before moving on to the need for future research."
Response: We strengthened the conclusion by highlighting the unique contributions of the research to existing academic literature and emphasizing the practical implications of the findings. We expanded on the practical implications, providing a more detailed discussion of how the concept of D-authorship can be applied in practice by designer-entrepreneurs.

- "...the three components (craft, design, and artistic) are promising, they also require a bit more flesh around the bones. See Suddaby (2010) for potentially useful content on achieving clarity here. More specifically, each of the components should be grounded in extant research and at the same time, they should be complementary instead of overlapping.
Response: These components were re-named to make them consistent (all nouns). The suggested reference was revisited to give clarity to the conclusion section. We precise

distinctions between the different elements of the theory. The new concepts were compared to extant literature to look for coherence and semantic relationships.

- "I would definitely spend more time on developing the design authorship concept as well as devote more space to practical implications. One way this could be achieved might be to condense the methodology section."
Response: This concept has been fleshed out in the conclusion section. Also the practical implication section has been expanded.

"...design authorship: the concept should be better grounded with regards to extant research (i.e. are there any similar concepts?), the three components could be revised/refined so that it is easier to separate them from each other, and it should be made more explicit whether the concept is binary or spatio-temporally more fluid."
Response: This comment has been addressed in the conclusion section. We included this extract in the first paragraph of the conclusion section. A designer-entrepreneur's authorship is divided into three components that are complementary and not mutually exclusive.

Minor corrections - Comments/Actions:

- "This research and article has the potential to make a really interesting contribution to discussions on the gap between invention and commercialization, but currently it undersells itself by not drawing out more strongly the findings from the research and their implications for practice and theory"
Response: okay.

-" This is a scientific paper and the language used should reflect it. Expressions such as 'go the extra mile', 'tap into', 'that concern with what will exist' and 'right up to' should be rewritten to a more formal language."
Response: Sorted, a proof reader revisit the paper.

- "What role does materiality play in design authorship? Going back to Schön's notion of backtalk, how does the material that the designer is working on influence the design authorship? Building on this, the design authorship concept could also benefit from considering the temporal dimension."
Response: Page 22, last paragraph.

- "Questioning user-centricity is definitely a promising avenue, and then this discussion could be linked in the implications section back to entrepreneurs more broadly."
Response: Page 23, first paragraph.

Minor corrections - Comments/Actions:

- "p. 4, "Design entrepreneurs fit within this description" <- how exactly? This could be expanded a bit more."

Response: Eliminated.

- "p. 4, “was in charged” <- d should be removed"
Response: Changed.

- "p. 4, not sure the section on “Design models” is necessary."
Response: This section has been included to show the reader the connection between the stablished design models and the entrepreneurial milestones.

- "p. 4, “mixed research team” <- not sure this is necessary if “mixed” in this context only means gender. Instead, maybe it would make sense to describe the authors’ positionality a bit more."
Response: Changed. Explained in page 9 third paragraph.

- "Since the study utilizes visuals and verbal accounts, it might be worthwhile to look into multimodal research (e.g. Höllerer et al., 2018; Kress & van Leeuwen, 2020)"
Response: Constructivist Grounded Theory is a form of Multimodal research. Its emphasis is prioritising the integration of various data sources and data types.

- "Notions of ethos could be strengthened by drawing on Fayard I.’s (2017) work."
Response: We include this in Page 20

- "Would love to see the design authorship concept visualized somehow to increase its chances of getting cited by future research."
Response: There is a video abstract of the D-Authorship https://youtu.be/F3sOyEqp3BI

- "Think it would make sense to have a more nuanced discussion of designers and design authorship – graphic designers are not the same as fashion designers, and at the same time not every designer is trained to be an artistic designer (thinking of Bruno Munari here)."
Response: In this research project, this is outside of the scope given the product based designer entrepreneurs.

- "Flagging it here once more just in case, but how many of the informants were solo entrepreneurs and how many were part of a team?"
Response: All of our designer entrepreneurs had support and collaborators. But in the end they were the ones going through the whole process.

- "Practical implications could be expanded as there are some very interesting points here! Garbuio *et al*.’s (2018) study on design cognition and entrepreneurship should be useful here." Response: We expanded the practical implications following the previous recommendations.

Thank you once again for such a meticulous review

Best Regards,
Dr Aldo Valencia
Newcastle Business School, Northumbria University, UK.

Competing Interests: No competing interests were disclosed.

Reviewer Report 16 November 2021

https://doi.org/10.21956/openreseurope.15253.r27980

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Miikka Lehtonen
[1] Rikkyo University College of Business, Tokyo, Japan
[2] Rikkyo University College of Business, Tokyo, Japan

Dear Authors,

It was a pleasure reading this manuscript titled ”Design Authorship: an intrinsic driver of designer-entrepreneurs”. As is mentioned at the end of the manuscript, this is a topic that warrants further inquiry, and I could not agree more. As such, I hope this review statement helps in further developing this manuscript so it could attract future research even more.

Before moving on to the actual review statement, sharing a few words about the perspective from where it is coming. In essence, I obtained my PhD from a business in school in 2014, and ever since I have been working mostly in business and design schools. Teaching and researching strategic design / design management as well as writing about design-driven pedagogies. Just to give you a brief idea on what is my perspective to the paper.

To begin with, the concept of design authorship is both interesting and relevant. To make it even stronger, though, two things might be useful. First, contextualize the concept with regards to existing concepts. For example, which concepts are identified as being related to it? This, then, would help the reader better evaluate the novelty of the concept. In addition, a better grounding of the concept would also help in creating a more coherent body of knowledge (instead of separate contributions here and there). Second, while the three components (craft, design, and artistic) are promising, they also require a bit more flesh around the bones. See Suddaby (2010) for potentially useful content on achieving clarity here. More specifically, each of the components should be grounded in extant research and at the same time they should be complementary instead of overlapping. For instance, Bell *et al.* (2019) have written about craft from management studies’ perspective, and at the same time one could also argue that design can be artistic and contain craft as an integral element. Point being, since the three components are so closely interrelated, why not collapse them into one component? To be clear, I do see value in this concept, just highlighting here that the design authorship concept requires more discussion and a deeper connection to extant research, lest it becomes convoluted and slightly tautological.

At the same time, and as a minor comment, what role does materiality play in design authorship?

Going back to Schön's notion of backtalk, how does the material that the designer is working on influence the design authorship? Building on this, the design authorship concept could also benefit from considering the temporal dimension. Is design authorship a binary concept? Or does it fluctuate over time?

To summarize my comments regarding design authorship: the concept should be better grounded with regards to extant research (i.e. are there any similar concepts?), the three components could be revised / refined so that it is easier to separate them from each other, and it should be made more explicit whether the concept is binary or spatio-temporally more fluid.

Looking at the comments above and below, I would definitely spend more time on developing the design authorship concept as well as devote more space to practical implications. One way this could be achieved might be to condense the methodology section. Visuals, for instance, could be made smaller and some of them could perhaps even be removed (e.g., figures 1 and 2) – as a visual researcher, I am all up for making manuscripts more visual, but at the same time they should somehow move the main argument(s) forward. From this perspective, I am not convinced figures 1 and 2 carry much weight (not saying they are worthless, just not convinced they are needed here).

At the same time, the method section could benefit from expanding it a bit whilst mostly focusing on making it more condensed (I know this is paradoxical, but I will suggest next how this could be achieved). For example, Table 1 could be moved to the Appendix, while Phase 1 could potentially be removed since that should be covered in the literature review section. At the same time, and echoing one of the minor comments below, if the paper deals with multimodal data (as it seems to be given that both visual and verbal data was collected), data analysis could be more robust in showing how multimodal data was analyzed. In other words, it should be made more explicit how theoretical insights were derived from the data (instead of just telling about the analysis process, it would be great to show this to the reader).

In terms of positioning the paper, the introduction could more clearly state the paper focuses on design authorship – after having finished the manuscript, I realized the paragraph "In this paper, we question…" (p. 3) refers to the concept, but it should be made even more explicit. Right now, the introduction seems rather convoluted with discussions on design thinking, user-centricity, entrepreneurs, and design entrepreneurs (same is reflect in keywords that, after revising the manuscript, could be changed to better reflect the manuscript). Literature review, then, seems to focus on comparing entrepreneurs and design entrepreneurs (one idea could be to have a table comparing them, if this path is what the authors wish to embark on), but this seems to be slightly misaligned with the introduction. In other words, a) what do we know about design entrepreneurs and b) what we need to know more about? Questioning user-centricity is definitely a promising avenue, and then this discussion could be linked in the implications section back to entrepreneurs more broadly. In essence, it feels as if the beginning of the manuscript is trying to promise a bit too much, but there is no need for that. This is a promising paper that holds great potential on its own!

All in all, this is an interesting study that will most certainly contribute to our current understanding of design entrepreneurship. Many thanks for inviting me on this journey, and hope this review statement helps in further developing the manuscript!

Minor comments:

- p. 4, “Design entrepreneurs fit within this description” <- how exactly? This could be expanded a bit more.
- p. 4, “was in charged” <- d should be removed.
- p. 4, not sure the section on “Design models” is necessary.
- p. 4, “mixed research team” <- not sure this is necessary if “mixed” in this context only means gender. Instead, maybe it would make sense to describe the authors’ positionality a bit more.
- Since the study utilizes visuals and verbal accounts, it might be worthwhile to look into multimodal research (e.g. Höllerer et al., 2018; Kress & van Leeuwen, 2020)
- Notions of ethos could be strengthened by drawing on Fayard I.’s (2017) work.
- Would love to see the design authorship concept visualized somehow to increase its chances of getting cited by future research.
- Think it would make sense to have a more nuanced discussion of designers and design authorship – graphic designers are not the same as fashion designers, and at the same time not every designer is trained to be an artistic designer (thinking of Bruno Munari here).
- Flagging it here once more just in case, but how many of the informants were solo entrepreneurs and how many were part of a team?
- Building on the above, perhaps there could be a 2x2 matrix, for example, that categorizes design authorship across different categories (e.g., would it make sense to say a designer working in a design agency might manifest “weak” design authorship while a designer working in their own studio is a textbook example of “strong” design authorship? This is just a rough example, in reality the situation is more nuanced).
- Practical implications could be expanded as there are some very interesting points here! Garbuio *et al*.’s (2018) study on design cognition and entrepreneurship should be useful here.

References:

Bell, E. *et al*. (2019). *The Organization of Craft Work*. Routledge.

Fayard, A-L. *et al*. (2017). How Nascent Occupations Construct a Mandate: The Case of Service Designers’ Ethos. *Administrative Science Quarterly*, 62(2), 270-303.

Garbuio, M. *et al*. (2018). Demystifying the Genius of Entrepreneurship: How Design Cognition Can Help Create the Next Generation of Entrepreneurs. *Academy of Management Learning & Education*, 17(1), 41-61.

Höllerer, M. A. *et al*. (2018). ‘A picture is worth a thousand words’: Multimodal sensemaking of the

global financial crisis. *Organization Studies*, 39, 617-644.

Kress, G. R. & van Leeuwen, T. (2020). *Reading images: The grammar of visual design*. Routledge.

Suddaby, R. (2010). Editor's Comments: Construct Clarity in Theories of Management and Organization. *Academy of Management Review*, 35(3), 346-357.

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1. Bell E, Mangia G, Taylor S, Toraldo M.L: The Organization of Craft Work: Identities, Meanings, and Materiality. *Routledge*. 2019.
2. Fayard A, Stigliani I, Bechky B: How Nascent Occupations Construct a Mandate: The Case of Service Designers' Ethos. *Administrative Science Quarterly*. 2017; **62** (2): 270-303 Publisher Full Text
3. Garbuio M, Dong A, Lin N, Tschang T, et al.: Demystifying the Genius of Entrepreneurship: How Design Cognition Can Help Create the Next Generation of Entrepreneurs. *Academy of Management Learning & Education*. 2018; **17** (1): 41-61 Publisher Full Text
4. Höllerer M, Jancsary D, Grafström M: 'A Picture is Worth a Thousand Words': Multimodal Sensemaking of the Global Financial Crisis. *Organization Studies*. 2018; **39** (5-6): 617-644 Publisher Full Text
5. Kress G.R, van Leeuwen T: Reading images: The grammar of visual design. *Routledge*. 2020.
6. Editor's Comments: Construct Clarity in Theories of Management and Organization. *Academy of Management Review*. 2010; **35** (3): 346-357 Publisher Full Text

Is the work clearly and accurately presented and does it engage with the current literature?
Partly

Is the study design appropriate and is the work technically sound?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Partly

Are all the source data and materials underlying the results available?
Partly

If applicable, is the statistical analysis and its interpretation appropriate?
No

Are the conclusions drawn adequately supported by the results?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Design management, creative industries, design education

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 03 Nov 2023

Aldo Valencia

Dear Dr Miikka Lehtonen, Rikkyo University College of Business, Tokyo, Japan.

I would like to express my sincere gratitude for the insightful and meticulous review of this paper. Your detailed and constructive feedback has been immensely valuable in refining and strengthening the quality of this manuscript. I appreciate the time and effort you have dedicated to carefully evaluating the content. Please find below the answers of all the comments. Comments and their responses ordered by section of the paper.

Literature Review - Comments/Actions:

- "At the end of the literature review, I asked myself 'so what have I learned from the review?' and the answer was unclear. The article did not draw together the main points that had been learned from the review of the literature and how the review advanced the development of the article. Would it have been helpful to include a doodle map as was mentioned later in the article?"
Response: The conclusion of the literature review section has been revised to offer a clearer summary of the main points derived from the review. Additionally, a brief section has been added to explicitly emphasize the contributions of the literature review to the overall development of the article. Moreover, an incorporation of a reference to the doodle map, described in the Methods and Research Method section, serves to illustrate how it facilitates the visualization of the conceptual framework of the article

"The lean start-up approach by Ries (2011) is very similar to the argument being made in this article about an 'outside-in' approach to design authorship. Therefore, it should have been given specific attention in the literature review and later the authors should have explained the differences between the two approaches."
Response: A specific section has been included in the literature review that discusses the similarities and differences between the Lean Start-up approach by Ries (2011) and the 'outside-in' approach to design authorship proposed in our article

- "First, contextualize the concept with regards to existing concepts. For example, which concepts are identified as being related to it? This, then, would help the reader better evaluate the novelty of the concept. A better grounding of the concept would also help in creating a more coherent body of knowledge (instead of separate contributions here and there)."
- "The introduction could more clearly state the paper focuses on design authorship – after having finished the manuscript, I realized the paragraph “In this paper, we question…” (p. 3) refers to the concept, but it should be made even more explicit. Right now, the introduction seems rather convoluted with discussions on design thinking, user-centricity, entrepreneurs, and design entrepreneurs (same is reflected in keywords that, after revising the manuscript, could be changed to better reflect the manuscript)."
Response: The section on design authorship in the literature review has been expanded to provide a more thorough contextualization of the concept. Related concepts and theories,

such as design thinking, user-centricity, and entrepreneurship, have been identified, and the way in which design authorship fits within this conceptual landscape has been discussed. This contextualization enhances the reader's understanding of the novelty and relevance of the concept and contributes to a more coherent body of knowledge.

- "Literature review, then, seems to focus on comparing entrepreneurs and design entrepreneurs (one idea could be to have a table comparing them if this path is what the authors wish to embark on), but this seems to be slightly misaligned with the introduction. In other words, a) what do we know about design entrepreneurs and b) what we need to know more about?"
Response: The need for clarity regarding the focus of the literature review has been pointed out, and in response, the literature review section has been restructured to provide a more organized and coherent discussion. A table has been included that compares entrepreneurs and design entrepreneurs to highlight their similarities and differences, addressing what is known about design entrepreneurs and emphasizing the aspects that require further exploration. This revision ensures better alignment with the introduction and addresses the concerns raised by the reviewer about the article's direction.

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"...Method, only for it to be repeated in more detail in 'Structure and Data Generation Methods'. Furthermore, the article is clearly about the feedback from the eleven design entrepreneurs, so why is there a need to discuss all the other participants / interviews since none of the information generated from these was actually used.
Response: The Research Method section provides a more concise and focused overview of the research methodology. Constructivist grounded theory requires the inclusion of different voices related to the subject of study.

- "The Research Method section begins with the words 'In Phase 2', but we have not been told previously what is Phase 1. Additionally, we are taken through the four phases in Research..."
Response: The research method section has been updated to provide a clear introduction to Phase 1 and a brief overview of the four research phases at the beginning of the section. This provides readers with a better understanding of the research process.

- Visuals, for instance, could be made smaller and some of them could perhaps even be removed (e.g., figures 1 and 2).
Response: The former figure 1 has been removed. The removal of this image does not compromise the clarity of the section.

- "The method section could benefit from expanding it a bit whilst mostly focusing on making it more condensed (I know this is paradoxical, but I will suggest next how this could be achieved). For example, Table 1 could be moved to the Appendix, while Phase 1 could potentially be removed since that should be covered in the literature review section."
Response: Moving Table 1 to the Appendix is a reasonable suggestion to streamline the main text. However, it compromises the clarity of this section. The reader needs to see the

concepts included in the milestones od the entrepreneurial journey included in the visual activity for data collection.

- "If the paper deals with multimodal data (as it seems to be given that both visual and verbal data was collected), data analysis could be more robust in showing how multimodal data was analyzed."
Response: Constructivist Grounded Theory allows the analysis of multimodal data, integrating textual, visual, and auditory information to conduct the phase analysis. The activity milestones show the sequence of events that the entrepreneurs followed. So we treat this visual aids as prompts for the main interview.

Conclusion - Comments/Actions:

- "The Conclusion was quite weak and failed to highlight the real value that this work adds to existing academic literature and the implications that it has for practice. There was so much to be written about the practical implications, but only two sentences were given before moving on to the need for future research".
Response: We strengthened the conclusion by highlighting the unique contributions of the research to existing academic literature and emphasizing the practical implications of the findings. We expanded on the practical implications, providing a more detailed discussion of how the concept of D-authorship can be applied in practice by designer-entrepreneurs.

- "...the three components (craft, design, and artistic) are promising, they also require a bit more flesh around the bones. See Suddaby (2010) for potentially useful content on achieving clarity here. More specifically, each of the components should be grounded in extant research and at the same time, they should be complementary instead of overlapping."
Response: These components were re-named to make them consistent (all nouns). The suggested reference was revisited to give clarity to the conclusion section. We precise distinctions between the different elements of the theory. The new concepts were compared to extant literature to look for coherence and semantic relationships.

- "...I would definitely spend more time on developing the design authorship concept as well as devote more space to practical implications. One way this could be achieved might be to condense the methodology section."
Response: This concept has been fleshed out in the conclusion section. Also the practical implication section has been expanded.

- "...design authorship: the concept should be better grounded with regards to extant research (i.e. are there any similar concepts?), the three components could be revised/refined so that it is easier to separate them from each other, and it should be made more explicit whether the concept is binary or spatio-temporally more fluid."
Response: This comment has been addressed in the conclusion section. We included this extract in the first paragraph of the conclusion section. A designer-entrepreneur's authorship is divided into three components that are complementary and not mutually exclusive.

Minor corrections - Comments/Actions:

- "This research and article has the potential to make a really interesting contribution to discussions on the gap between invention and commercialization, but currently it undersells itself by not drawing out more strongly the findings from the research and their implications for practice and theory".
Response: okay.

- "This is a scientific paper and the language used should reflect it. Expressions such as 'go the extra mile', 'tap into', 'that concern with what will exist' and 'right up to' should be rewritten to a more formal language
Response: Sorted, a native proofreader revisit the paper.

- "...what role does materiality play in design authorship? Going back to Schön's notion of backtalk, how does the material that the designer is working on influence the design authorship? Building on this, the design authorship concept could also benefit from considering the temporal dimension.
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Response: Eliminated.

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Thank you once again for such a meticulous review.

Best Regards,
Dr Aldo Valencia
Newcastle Business School, Northumbria University, UK.

Competing Interests: No competing interests were disclosed.