

# Designing Futures by Empowering Novice Designers

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## ABSTRACT

*“There is a sweet spot between the known and the unknown where originality happens; the key is to be able to linger there without panicking.”*

Ed Catmull, co-founder of Pixar

All design involves shaping the future - from an industrial design prototype that combines new and old materials to a strategic designer grappling with the complexities of inter-connected systems, each one is optimistically moving towards an intended future. To design such futures, we need more than research, analysis, synthesis, and strategy. We need a commitment to and a deep appreciation of design methods. Ultimately the most nuanced and insightful foresight work is realized through design, design that moves people towards preferred futures.

Whose future? How to frame such complex problems? How to consider and weigh potential future pathways? These vexing issues paralyze inexperienced designers, often appearing as a collection of magical acts that are a rarefied mix of process, experience, and intuition. **How then does an inexperienced designer move from novice to expert?**

Our research has been informed by a comprehensive literature review of design and design history, a survey of design practitioners and industry interviews with both inexperienced and experienced design professionals. This report embraces a three-act structure and focuses on: **the changing nature of design and designers and how education providers have responded to these challenges; a synthesis of survey and interview responses that helps define the future designer; and practical recommendations** to assist novice designers in their continued learning towards the development of their design practice.

Our key findings include the realization that design methods are either assumed or overlooked in most graduate design programs that focus on futures-related endeavors. Further, through synthesis, we distilled **six insights**, which include: **Good design starts with advocacy; Design is an anticipatory state of being; On the road to mastery, Learn from travelers; Design depth over scratching the surface; Going beyond the algorithm to develop curiosity and Design literacy matters.**

These insights are intended to act as inspirational criteria for crafting design learning, and we offer a prototype that combines physical and digital tools to assist the novice designer. We hope this prototype encourages the development and adoption of design habits - habits that are more than just efficiencies or techniques, but rather the forging of an identity, **towards becoming a designer of futures.**

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SFI Graduating Class of 2024. We did it.

We are incredibly grateful for the contributions of all those mentioned above. This MRP is a culmination of our collective efforts.

# DEDICATION

Is design everything? No, you are my everything. To Caroline, Ethan, and Natalie.

*Douglas Reid*

To Fil, whose support was integral to the success of the last three years of work. To Taran and Keya, my sources of inspiration and laughter, and of course, deepest gratitude to my parents and sister Ahailya, the twin pillars of encouragement who have always championed my endeavours, no matter how crazy.

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*Reshmi Bisessar*

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# INTRODUCTION

In March 2023, the Design Issue of MIT Technology Review proclaimed, “**If design is everything, is it anything?**”. This deceptively simple, seven-word sentence has struck a long-lasting chord with us, akin to a musical note or hum that has lodged in the back of our collective minds. A note that reverberates and creates a sense of unease, yet one that motivates us to consider the changing nature of the design profession and our intended role within it.

We acknowledge that the definition of design itself, as a process and a practice, is fluid, morphing from a historical emphasis on aesthetics and production to complex problem-solving and strategic-orientated endeavors. From industrial prototypes exploring material innovation to strategic frameworks unraveling complex systems, each act of design carries the inherent potential to influence the futures we inhabit. **Design is an active force shaping the very states of tomorrow.** Subsequently, the weighty premise of designing futures is both appealing and angst-inducing to novice practitioners.

*“Design wasn’t the end; it was simply the beginning. The design wasn’t found in its components or in the artifact but in the process—design became a form of inquiry.”*

## Jarrett Fuller

Moreover, to inexperienced designers, the process of design can often appear as a collection of magical acts. The methods of problem framing, synthesis and iteration are a mix of process, experience, and intuition. Further, the design process encapsulates ever-present tensions: a desire to engage in slow, complex, and iterative processes, with an increasing need to provide fast and readily implementable solutions; a need to revel in ambiguity, yet still move organizations towards actionable solutions; and a need to constantly rethink the role of the designer, from expert to humble, curious collaborator. Additionally, as we move into an exponential phase of technological development, generative technologies will further challenge these tensions.

To consider the transitional and potentially transformative role of designers, we consider two archetypes - the **Maker Designer** and the **Strategic Designer**. How does an inexperienced designer morph across these two definitions? Are such definitions even useful or overly convenient simplifications? Against this backdrop, we make the following assertion: We are aligned with Valtonen’s (Valtonen, 2020) notion that “**design practice is intrinsically about change and changing the world**” ( P.505). Further, while there are a myriad of business school offerings related to design and innovation, we subscribe to Martin’s (Martin, 2022) premise that there is indeed a “design school advantage”, in contributing to complex issues and challenges. We assert that **design methods and habits matter** - that while a designer requires a growing appreciation of complexity, systems and ethics, there is still an underlying need for an appreciation of iterative design methods - cognition, synthesis, framing, and prototyping.

This research stems from this core understanding, focusing on a crucial question: **how might we equip inexperienced designers with the confidence and agency to become effective shapers of these futures?**

Design Schools and Design educators have responded to the challenges of the changing designer, by crafting programs that strive to Design Futures. While no graduate program should be considered as anything more than a refined starting point for future career and academic experiences, we believe that such programs focus more on systems and foresight, with design practices either being assumed or overlooked. This research is not intended to be a critique of design education, rather it is an attempt to help bridge the gap for inexperienced designers - helping to cultivate a practice that is iterative, nuanced, and comfortable with ambiguity.

Further, we propose that the practice of design and the role of the designer lacks the clarity of other professions. Doctors' doctor and lawyers' lawyer, but what do designers do? This evolving conundrum is particularly vexing for new graduates as the perceived outputs of design become ever more intangible. For example, just how can sustained influence over a complex system be captured, measured, and communicated?

This report will seek to identify the habits of experienced designers and build a collection of resources that will aid inexperienced designers in the creation and maintenance of their design practice.

Lastly, given our desire to empower novice designers to design futures, there is value in stating our combined positionality:

- We are two Masters of Design students in a part-time program (Strategic Foresight and Innovation, OCAD University).
- Our Undergraduate degrees are in non-design programs/disciplines.
- While our combined decades of professional work allow for the application of design approaches and frameworks, only one of us has recently captured a service design role and title.
- We acknowledge shortcomings in our design literacy – we have only been exposed to the fields of design history, criticism, and contemporary design practice through our initial investigations.
- While we seek experiences and insights from non-traditional and historically marginalized influences, the initial scope of our own collective experiences is distinctly Western and North American.

# Research Methodology and Objectives

Within this section, we will articulate our chosen research framework, provide a summary of our intended research investigations, and highlight the overall objectives of this major research project.

## Research Framework

Our initial consideration of design research frameworks included a review of the Design Council (UK)'s updated double-diamond approach that outlines how design and innovation unfold. (*The Double Diamond - Design Council, 2024.*) The original four stage process - discover, define, develop, and deliver - is readily digested by inexperienced design students. Whilst the updated model - the framework for innovation - includes nuanced considerations for engagement, design methods, and leadership, we continued to review potential models to identify a framework that would best suit the ambiguous nature of our intended research.

During a period of further investigation of design models and frameworks, we were taken with the organic depictions and prescient nature of the "statement of the Eames Design process" (*Design Process - Charles & Ray, 2021*), originally unveiled at a Design Exhibit in 1969. The Eames framework defines an overlapping area where the needs of the designer, the client, and society are met.

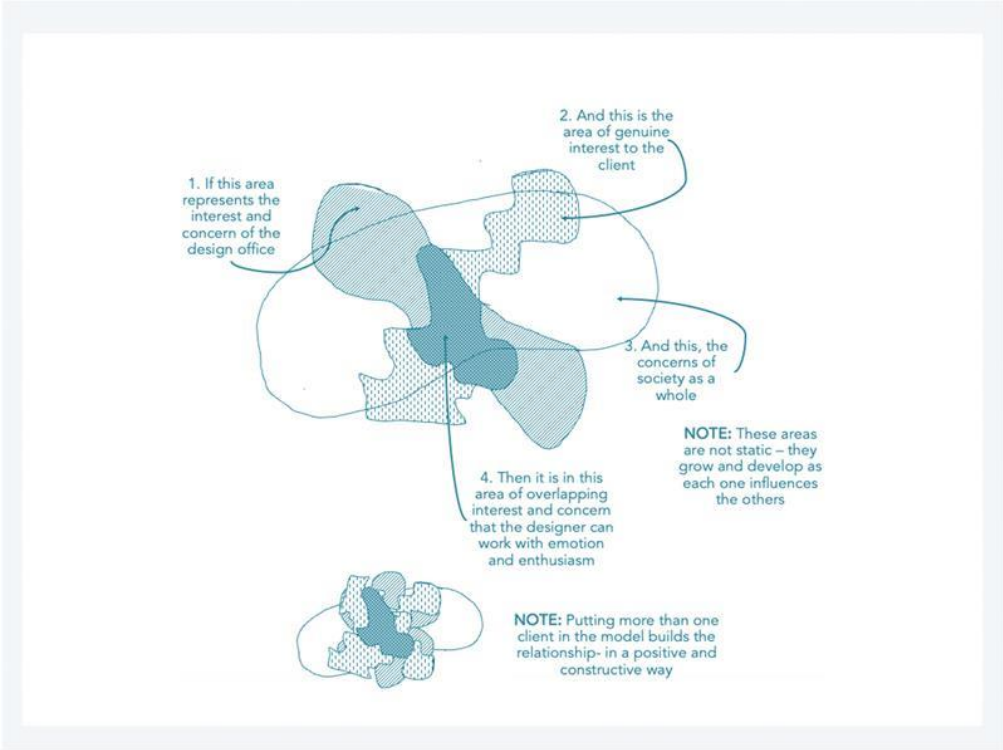
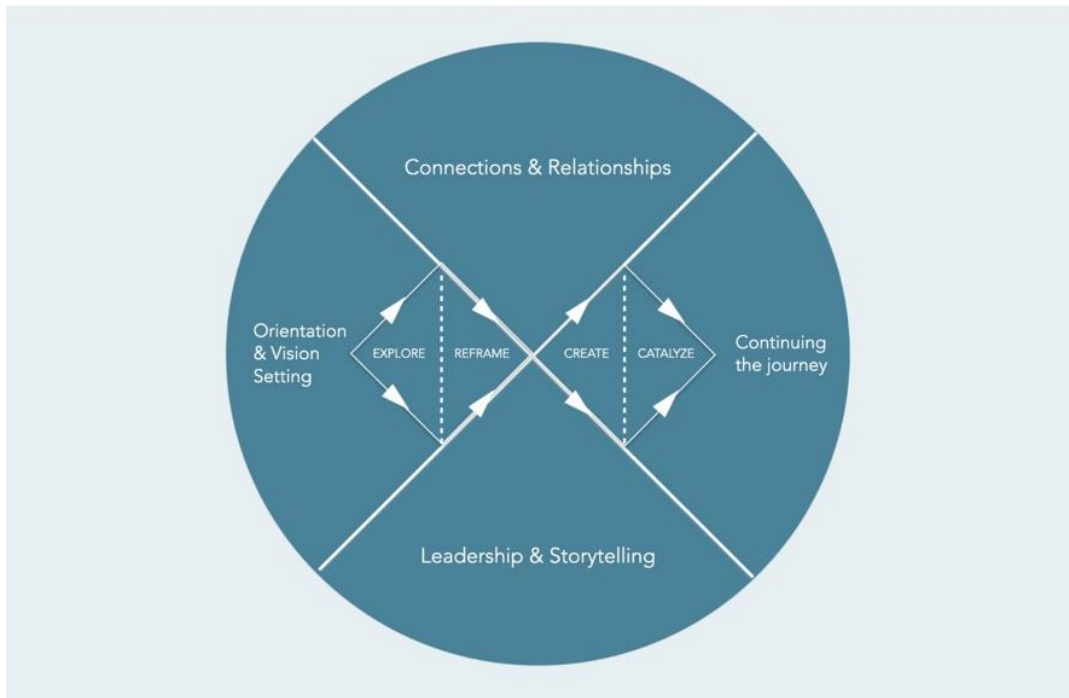


Figure 1: Adapted from Charles Eames' conceptual diagram of the design process.

Inspired by the Eames consideration of society, we returned to the Design Council and reviewed their systemic design framework - a model that strives to be people and planet-centric and one that espouses four design activities - **exploring, reframing, creating, and catalyzing.**(*Systemic Design Framework - Design Council, 2024*)



*Figure 2: Adapted from Design Council UK - Systemic Design Framework*

Subsequently, our chosen methodology utilizes the four design activities of the systemic design framework, with an additional lens on storytelling. We are inspired by Parrish's (Parrish, 2008) thoughtful prompt "What thinking process is it that can reconcile these apparent opposites, drawing from both analysis and synthesis in equal measure?" (p.73). Building on Parrish's assertion that it is indeed story that bridges analysis and synthesis, we have embraced the familiar three act story structure detailed in *Design is Storytelling* (Lupton, 2017)

<b>Design Story</b>	<b>Systemic Design Activity</b>	<b>Research Questions</b>	<b>Research Methods</b>
ACT I  If Design is everything?	Exploring	Just what is design? How might design be defined? What has been the response of Design Schools to the needs of the new Designer?	Literature Review  Literature Review & Niche Discovery
ACT II  Towards a Design Practice	Exploring Re-framing	Lawyers' lawyer and doctors' doctor, what do designers do? What are the gaps that new graduates are experiencing?	Literature review Survey of Design students, educators, and professionals. Semi-structured interviews with Design professionals.
ACT III  Habits for Designers of the future	Creating Catalyzing	What are the habits of practice that new designers need to cultivate?	Sensemaking  Mapping
Epilogue	Catalyzing	What digital and physical tools could be used to sustain design habits for the New Designer?	

Table 1: Our Design Story

## Literature Review, Surveys & Interviews

The literature review intentionally mirrored aspects of familiar design methods - flaring out and focusing in - flaring out to consider the legacy and influence of design history and focusing in on competing definitions of design and the potential role of the future designer. In doing so, we have uncovered articles and commentary from design researchers, education researchers, design futurists, and systems designers.

The literature review serves as a pivotal backbone to **Act I - If Design is Everything** of our design story, helping to synthesize a shared definition of design, with a review of the program and curriculum responses from Design Schools. Further, our literature review has helped surface an underlying tension - how does a designer transform/shift from the creation of tangible physical products towards intangible digital solutions and ultimately, towards the consideration of intractable systems-based scenarios? Moreover, with the emergence of generative artificial intelligence technologies, we ponder, where is design situated if the industry embraces "autonomous innovation" (Board of Innovation, 2023)

To address these tensions, we have developed two descriptions of designer types/roles that were explored during surveys and interviews - the **Maker Designer** and the **Strategic Designer**.

In **Act II -Towards a Design Practice**, we derived insights by synthesizing responses from a research survey and interviews. The survey focused on members of the design community - students, educators, and professionals. The survey responses were coded and then clustered into themes. The survey responses provided a framework for an informed gap analysis for designers - identifying the leaps that designers must make if they are to maintain relevance with other professions. Moreover, the survey responses provided further commentary on the notion of the Maker Designer and the Strategic Designer roles.

We interviewed eighteen professional designers, mostly situated in North America, with a range of ages, experience, and exposure to design disciplines. The interviews were semi-structured and focused on the work experience of the designers; how they have moved across design disciplines, and advice on areas of practice or design habits that inexperienced designers may benefit from. The interviewees expressed both excitement and apprehension regarding the future of design and the habits necessary to thrive in an increasingly ambiguous, interdisciplinary profession.

In **Act III - Habits for Designers of the Future**, after a further synthesis of the literature review, the survey responses and interviews evolved into a grouping of six overarching insights that will serve as guiding inspirations for the development of a design learning-focused prototype. The prototype is inspired by our definition of design from Act I and the insights that were developed in Act II.

## Research Objectives

The objectives of our collective research are focused on the creation of practical advice for inexperienced designers - assisting those designers in the articulation, development and maintenance of their own design habits and practice. In doing so, we have considered the following research questions:

### Primary Research Question:

*How might we equip inexperienced designers with the confidence and agency to become effective shapers of futures?*

### Secondary Research Questions:

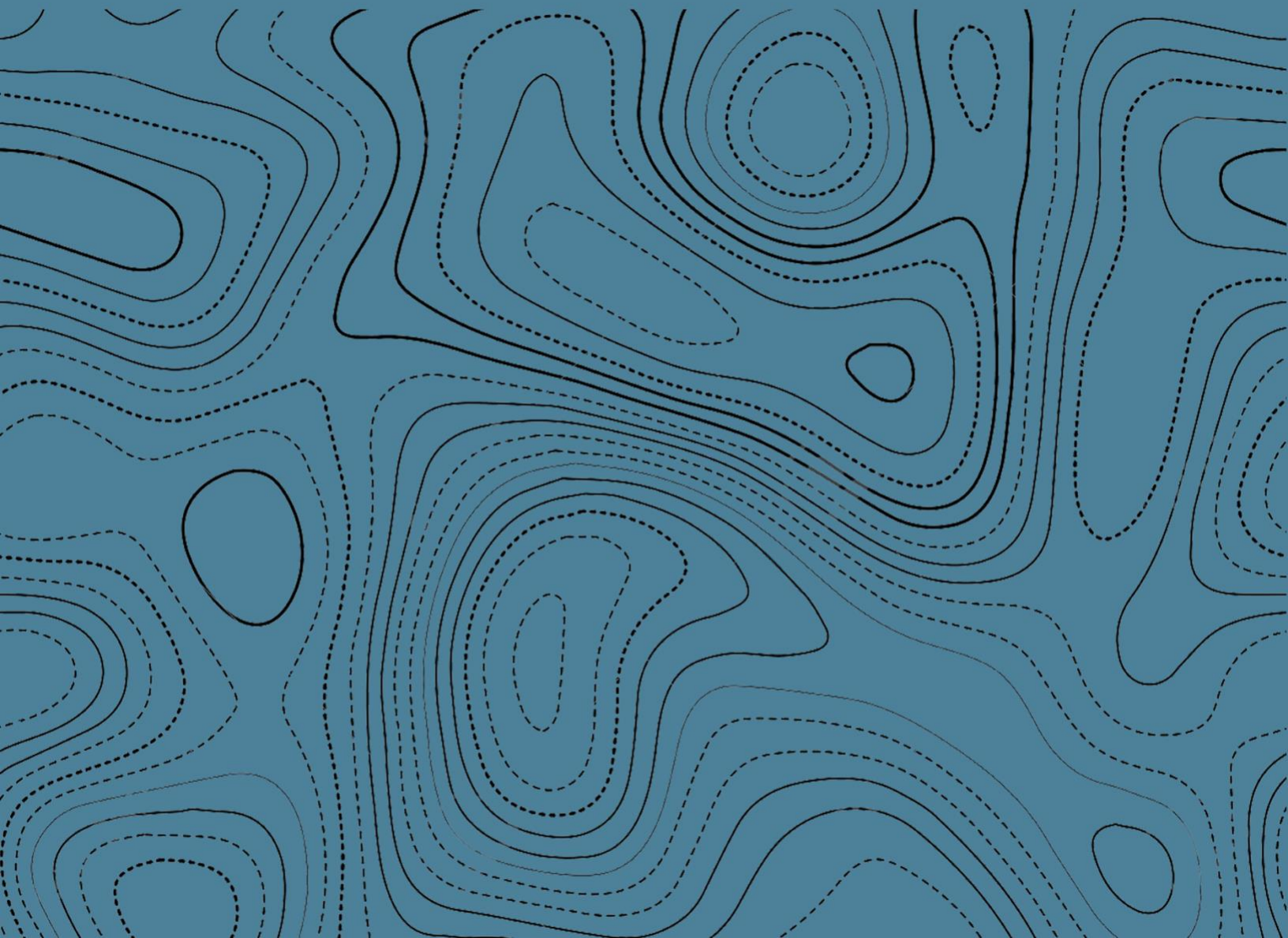
- What is our definition of design and the design process?
- How has the definition of design evolved? What can we learn from design history to understand designer's past and future contributions?
- How have Design educators responded to the changing landscape of design?
- What will be the future role of the designer? What are the skill sets of future designers?
- What are the designerly habits that experienced designers would recommend to inexperienced designers?

We acknowledge the limitations of our research survey and interviews, namely that with forty survey responses and eighteen interviewees we are only scratching the surface of design practice and habits.

ACT I

---

If design is everything,  
is it anything ?





# ACT I: IF DESIGN IS EVERYTHING, IS IT ANYTHING?

Act 1 consists of three interconnected scenes. Scene I - Design, Designers & Design History provides a tour of design history and introduces the concepts of the maker and strategic designer. Scene II - Design Education Responses, provides an overview of design expertise, a review of graduate program offerings and the potential traits of a customized learning journey for designers. Finally, in Scene III- Our definition of design - we articulate our own beliefs and assertions regarding the changing nature of design.

## Scene I - Design, Designers & Design History

In this section, we will strive to provide our definition of design. In doing so, we will consider a summary of design history and the transformation of the meaning of design from a process that was once intrinsically linked to aesthetics and production to a wide-ranging term that is now connected with systems thinking and designing futures. Just as the definition of design has changed, we will also consider the evolving role of the designer, from Maker Designer to Systems Thinker and Strategist. Moreover, we will attempt to capture how design schools have responded to these shifts in design practices. With brief segues into design thinking and the potential impact of generative artificial intelligence on design, we will arrive at our definition of design - one that strives to capture the ever-evolving nature of design and an optimistic view on the impact of designers.

As we attempt to dissect the origins and futures of design, we start with a nebulous proposition from the author, Matthew Witzinsky. In "Design after Capitalism" (Witzinsky, 2022), he references the work of philosopher Timothy Morton and his concept of hyperobjects. Morton's enigmatic term is used to describe phenomena, such as global warming, that are massively distributed in time and space relative to human lifespans. Morton provides further structure to this ambiguous concept by stating that "the concept of hyperobjects gives us a single word to describe something on the tips of our tongues" (Timothy Morton, *High Country News*, 2015).

We know the feeling. A definition of design appears to be continually on the tips of our tongues. The vexing problem is that design has so many meanings at different times and contexts and is, as Alice Rawsthorn states, "prone to muddles and cliches" (Nomad, 2021). Design is simultaneously a verb, a profession, an output of a process and a methodology/framework that, over time, even with good intentions, can have lasting impacts on people, systems, and society. Yes, design is indeed a hyperobject.

As we explore definitions of design, we are reminded of the outcomes of "Can we define design? Analyzing twenty years of debate on a large email discussion list" (Blackler et al., 2021) After summarizing the contents and comments of a PhD Design list-serv, whereby design was categorized into three distinct areas: Design and Science; Design Research and Theory; and Is Everyone a designer? - the authors concluded that "our findings... show the 20 years of discussion have made little progress towards an actual definition" (p.67). Moreover, a description of the ambiguous and fluid nature of design is captured in Whitney and Nogueira's assertion that defining a framework for design is like "cutting cubes out of fog" (Whitney & Nogueira, 2020).

Undaunted by these revelations, we begin by looking at a brief overview of design history...

## Design History - a whirlwind tour

*“Great scientists learn from and build upon what has gone before them. Similarly, attorneys make their careers by studying precedent and the legal cases of the past... Religious leaders immerse themselves in texts that are millennia old. Learning from the great thinkers, leaders, and innovators of the past—from their mindsets, successes, and failures—inspires and informs human activity.”*

### Gary Hoover

Given the physical time constraints of a graduate design program, it is understandable that there are rarely foundational courses in design theory or design history. However, by looking back through the changing historical definitions and perceptions of design, we wonder if an appreciation of design history is an essential experience for all designers? If we are moving towards a role that hopes to design futures, it would seem prudent to understand what has come before.

As such, we intend to offer a brief and humble history of design - one that makes considerable leaps in time, back and forth across the millennia. We have dedicated a substantial proportion of this section of the report to what we perceive as a gap for those students who do not possess a design background. Design Historians forgive us, this summary is intended for those, like ourselves, who are just beginning their explorations.

Figure 3 provides a high level timeline which outlines some major design periods from the 1700s to present day.

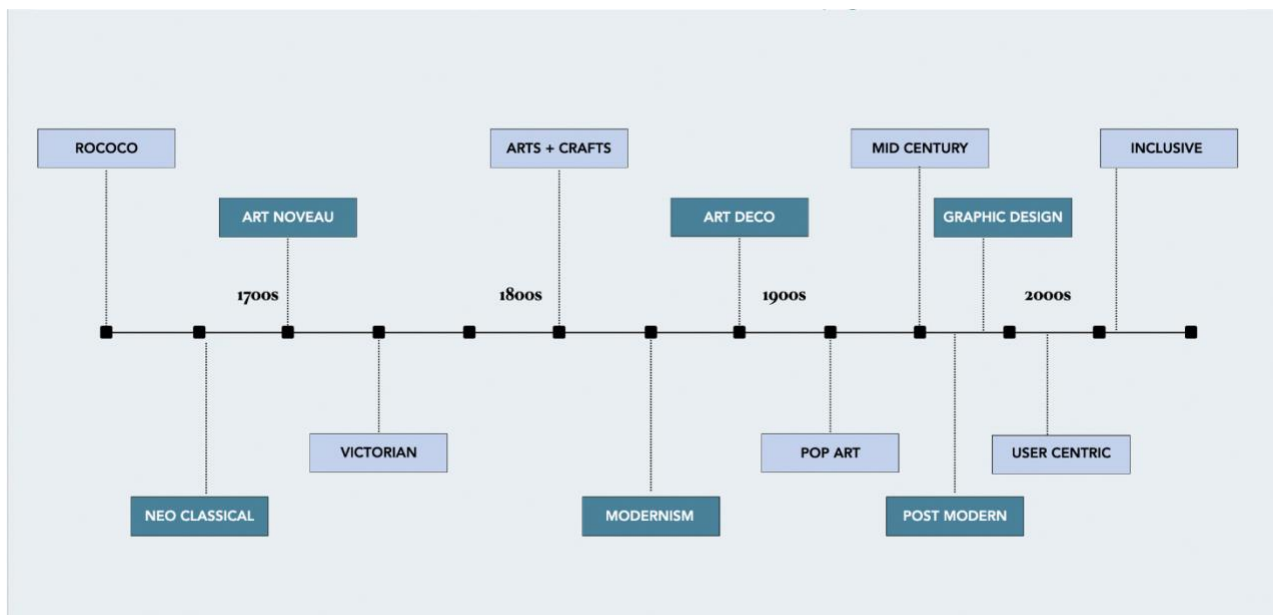


Figure 3: High-level timeline of significant design periods.

In “Making Design Theory” (Redström, 2017), Johan Redström claims that “design, in the most generic sense of the word, began over 2.5 million years ago when Homo Habilis manufactured the first

tools" (foreword). We're going to assume that Homo Habilis wasn't debating the meaning of design, so let's fast-forward to Roman times.

Delving into the Latin roots of the term "design," we find that it traces back to the Latin word "signum," which translates to the Italian "segno" (sign) and eventually to "disegno" (drawing) (A Brief History of the Word "Design", *intOndo magazine*, 2021). Monchaux (*Why the Definition of Design Might Need a Change*, de Monchaux, 2023.) challenges the notion that design is merely about drawing, arguing that its true significance was diminished between the 1300s and 1500s. He provides a specific example from the Renaissance era, where in 1340, the term Design or "disegno" was mentioned in a contract parchment to document the construction plans of master builders. While acknowledging the historical association of sketches with large-scale projects, Monchaux contends that as master builders began overseeing multiple ventures, designs became essential to coordinate all facets of intricate projects. This highlights that design involves more than sketching; it aims to capture and convey information across various fields. Monchaux asserts that design fundamentally revolves around "imposing shape on the world, in its institutions and arrangements (Monchaux, 2023).

Furthermore, Monchaux provides us with a welcome reminder that design has, for centuries, been associated with economic activities and production processes.

### **Design Revolutions: Design and Industrial Revolutions**

In Fall 2023, in an article focused on the influence of Design Schools on Corporate America, *FastCompany* reminded us that "Design, arguably, has always been art for commerce." (Segran, Elizabeth, 2023)

Whilst the history of Design should be considered through several different lenses - social, political, and cultural contexts - we humbly assert that there is value in considering the chronological growth of design and design movements/eras.

We will follow the lead of Victor Margolin, a professor emeritus of design history at the University of Illinois, Chicago. In Margolin's sweeping opus on the *World History of Design*, (Margolin, Victor, 2015) he divides his studies into two volumes - prehistoric to World War I and World War I to World War II. Volume One's post renaissance highlights include the industrial revolution (1750 to 1830); The Craft Ideal and the Art movement (1861 -1915) and the Art Nouveau and Decorative Impulse (1890 - 1914). Volume two takes the reader on a sweeping geographical tour of design across thirty countries and continents from 1905-1945.

The Industrial revolution is often cited as a pivotal period for the emergence of design practices. Indeed, Müller (Müller, 2017) goes further and uses the term "design revolutions" to describe when changes in design align with the emergence of new technologies. Müller cites the printing press, the steam engine, the introduction and adoption of electricity and the emergence of the computer as transformative advancements that are aligned with significant changes in design practices and the emergence of new design disciplines.

Building on Margolin's chronological highlights, the Industrial Designers Society of America (IDSA) (*What Is Industrial Design?*, 2019) states that Industrial design emerged "...as a professional practice in the early

19th century [and] can be directly linked to the industrial revolution and transition from small volume craft to mass-produced products for a consumer class population."

Stephen J. Eskilson's acclaimed writings in "Graphic Design: a New History", in a similar fashion to Redström and Margolin, states that design's prehistory can be found in ancient civilizations. (Graphic Design A New History, 2007). The author's example of cuneiform as the first writing system dates to 1750 BCE. Throughout the book, Eskilson strives to convey that graphic design is much more than changes in stylings and individual achievements and is instead "deeply...embedded in the fabric of society in every era". (Eskilson, Stephen, 2019, p. 10) Eskilson also highlights the importance of technology revolutions - citing the creation of the Gutenberg printing press and the emergence of movable type. Furthermore, as he deftly demonstrates the use of Graphic Design through the ages, he asserts that modern design grew from the influence of Victorian-age reformers.

Indeed, the origins of the Victoria and Albert Museum, with its mission to "educate designers, manufacturers and the public in art and design", stems from the Great Exhibition of 1851. The Great Exhibition, the first ever international exhibition of manufactured products, has been described as the "most successful, memorable and influential cultural event of the 19th century" (The Great Exhibition of 1851 | The Gazette, n.d.). The origins of product design, with its close associations to industrial design, are often connected to the industrial age.

The tension between craftsmanship and mass production is evident when considering the Industrial Revolution and the Craft Movement. Across many countries, people moved from rural settings to cities, primarily to work in factories that had invested in technologies such as steam powered devices, mechanized looms and knitting frames. Manufactured goods could now be mass produced, leading to cheaper merchandise.

The Arts and Crafts movement emerged as a counter/opponent to the economic benefits of mass production. Indeed, it is noteworthy that even in these ostensibly product-focused eras, that designers were considering factors beyond production and consumption, and deliberating over social and economic concerns. For example, Henry Cole, recognized the importance of combining art and industry and founded Summerly's Art Manufactures, a way in which painters and sculptors were able to make money by designing for industries (*Sir Henry Cole | Victorian Era, Arts & Crafts Movement | Britannica, 2024*)

Similarly, John Ruskin (1819-1900) criticized the dehumanizing effects of industrialization and championed the importance of beauty, craftsmanship, and nature in human life. Ruskin believed, that men and women might lead lives of "greater aesthetic fulfillment, in an environment less degraded by industrial pollution" (*John Ruskin - Art Critic, Writer, Social Critic | Britannica, 2024.*)

William Morris, a designer, poet, and novelist is often cited as a significant advocate for the Crafts movement, which encouraged handwork (handicrafts and decorative arts) over industrial work. Morris's influence, including his socially aware teachings, extends towards Art Nouveau, where designers "endeavoured to achieve the synthesis of art and craft, and further, the creation of spiritually uplifting Gesamtkunstwerk – (total work of art) encompassing a variety of media" (Gontar, 2006). Not surprisingly, Art Nouveau came to an end at the outbreak of World War I.

Even in this briefest of design history summaries, we would be remiss to omit the influence of the Bauhaus. Walter Gropius, a German American architect, is credited with founding the Bauhaus School in 1919. In the Bauhaus Manifesto, Gropius penned a lofty and aspirational goal for the new school - "let us strive for, conceive and create the new building of the future that will unite every discipline, architecture and sculpture and painting, and which will one day rise heavenwards from the million hands of craftsmen as a clear symbol of a new belief to come". Despite the short-lived physical life of the Bauhaus - the German based schools were closed in 1933 - the teaching staff and students have, according to Cook (*The Endless Influence of the Bauhaus*, 2017) created "the endless influence of the Bauhaus". Iconic Bauhaus furniture design continues to thrive almost a century later, and Bauhaus Graphic Design, with its signature use of "primary colours, thick straight lines slashing across white space, and that emphatically modern trilogy of circle, triangle and square" (Design Futures Research | AIGA, 2019.) remains instantly recognizable. Indeed, as Cook states "in an era of ornamentation, their streamlined appearance was revolutionary. This was a new age of design" (*The Endless Influence of the Bauhaus*, 2017)

The last director of the Bauhaus, Ludwig Mies van der Rohe, is still hugely influential, and described as "one of those architects that refuse to go away" (Astbury, 2018). Van Der Rohe is closely associated with the modernist architectural approach to American skyscrapers. Furthermore, he is credited with several design maxims that have lived on over decades, which include "less is more" and "God is in the details" (Astbury, 2018)

As we continue our whirlwind tour of design history, we notice a **pattern of movement and countermovement/reaction**. This pattern continues as Mid-century Modern design emerges as the post-world-war II response to the Bauhaus movement. At the forefront of this evergreen design era, we focus on an iconic husband and wife team that has been described as "the couple who shaped the way we live" - Charles and Ray Eames (Cook, 2017). The influence of their enigmatic partnership extends well beyond timeless furniture design, as they embraced graphic and textile design, architecture, and filmmaking.

From our combined viewpoints as graduate student designers, there is something compelling and pivotal about the approach and works of the Eames. Their approach to the making aspect of design is ably captured in the following quote from Charles Eames - "I think of our work as essentially that of a tradesman - the tools we use are often connected with the arts, but we use them to solve very specific problems which we or others may define" (Crist, 2012, p180) The practical ethos of their work is further highlighted in another Charles quote - "we don't do art, we solve problems. How to get from where we are to where we want to be" (Cook, 2017).

We do not assert that the Eames partnership is a tipping point in design and design discourse, but the variety of their works and their design approach suggest a suitable term for this kind of design - what we hope to describe as the **Maker Designer**. In "Making Design Theory" (Redström, 2017), Johan Redström reminds us of Design's inherent connection with the physical act of making - "all goods and services are designed. The urge to design...goes back to our pre-human ancestors. Making tools helped us become who we are - design helped to make us human" (p.9) Redström adds "Design takes concrete form in the work of the service professions that meet human needs, a broad range of making and planning disciplines." (p.10)

To recent design graduates there is a readily recognizable act of making in the creation of products - from furniture design to industrial design and even interaction design. The act of prototyping - creating an "artifact that approximates a feature of a product, service or system" (Camburn et al., 2017) p.1) - provides a tangible example of the iterative nature of design cycles, where user feedback is sought through interactions with low-fidelity representations of potential design solutions. Stanford D-Schools' mantra of building to think, rather than thinking about building evokes imagery of proactive designers continually learning from evolving prototypes. As we hark back to the Eames team, we can imagine hundreds of plywood and plastic molds that were used to iterate towards a final product.

If we fast-forward on our design history journey to the arrival of desktop computing, we note the emergence of digital design - a collective term that could be used to capture web design, interaction design, and most recently, user interface design and user experience design. Although the result may be a digital experience on a cell phone, it is still conceivable to imagine the designer as a maker and developer of iterative wireframes and prototypes.

To summarize, in the iterative design and development of products, and to a lesser extent, services, it is relatively straightforward to imagine the role of the **maker designer**. In our minds' eyes, we envision a designer testing multiple materials and variants of potential solutions, always learning from the insights that are derived from each iteration. Perhaps it is as simple as the physicality of product and industrial design, where there is an object that can be handled, studied, and reviewed.

However, it would seem too convenient to align the concept of the maker designer with only tangible design solutions. Indeed, in "Approaching change with and in design" (Valtonen, 2020) Anna Valtonen aptly suggests two phrases that capture the essence of how the process of design has changed, notably due to the emergence of service design and digitization. Firstly, "from material to immaterial" (p.507) Valtonen articulates the notion that making and designing has shifted towards intangible and digital environments. The author goes further to suggest that it is "nearly impossible" to discuss design today without assuming digital components and interaction experiences. Secondly, with "from objects to systems" (p.509), Valtonen raises the premise that design is now an interdisciplinary process, one that seeks to take on the challenges of complexity.

Subsequently, an early observation from our journey in Design History is that there is likely no definitive line to cross over that signifies the change or transformation from a **maker designer** to a **strategic designer**. Rather, the line is more akin to a hyphen or a dash, where the designer morphs into what is required for a particular project or engagement. As we ponder our next set of musings regarding design history, we are reminded of a recent quote from author and Stanford Professor, Barry Katz, whereby he asserts that "the role of the designer has moved from stylist to coordinator" (The Curiosity Department, 2023) one that coordinates across disciplines to tackle complexity

### **Embracing complexity - from Design Thinking to Designing Futures**

In "wicked problems in design thinking" (Buchanan, 1992) Richard Buchanan deftly captures the nuances of change within design practice. Buchanan expertly unpacks John Dewey's assertions within "The Quest for Certainty" (Ayres, 1930) where he describes the differences between the old Liberal Arts, defined as the study of known facts and histories, with the New Liberal Arts, with the use of "new disciplines of

integrative thinking". As an aside, this reminds us of the extensive summary of design definitions offered in Blackler et al's "Can we define design"(Blackler et al., 2021), whereby Nigel Cross and Bruce Archer both argue that "design should be the third area of education, alongside science and the arts and humanities" (p.46). The review of Dewey's work serves as background to Buchanan's own contemplations on the interconnectedness of design and design thinking.

Buchanan goes on to offer four categories of design practices: symbolic and visual communications; material objects; activities and organized services, and complex systems or environments for living, working, playing, and learning. Within these four areas, Buchanan describes the interconnected nature of design and the richness and depth of what the author describes as **design thinking**. This complex and nuanced view of design thinking is in stark contrast to the business-orientated, re-packaging of the design process that has been prevalent for the past twenty years. But before we dive into the fraught tensions surrounding design thinking, let's return to the notion of wicked problems.

Horst Rittel, a mathematician, and designer is credited with the introduction of the term - wicked problems - in 1967.(Rittel & Webber, 1973) Once more, as a reaction or counter movement to those design theorists that embraced and promoted a simplified design process, with essentially two design phases of problem definition and problem solution, Rittel advocated for the adoption of non-linear processes that tackled complex issues.

Rittel further explains the premise of wicked problems as a "class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing." (Chan & Xiang, 2022). Once more, we are reminded that ambiguity is embedded within design processes, and that the experiences are akin to "cutting cubes out of fog" (Whitney & Nogueira, 2020)

In 'From a design science to a design discipline: Understanding designerly ways of knowing and thinking'(Cross, 2007), author Nigel Cross looks back over the rise of modernism and notes from the 1920s to the 1970s, there were concerted efforts to "scientize" design with a focus on objectivity and rationality. Indeed, Cross highlights that it is Herb Simon's 1969 book, "The Sciences of the Artificial",(Simon, 2008) where the phrase "design as a way of thinking" is introduced. Simon advocated for the development of a 'science of design', a doctrine that would be analytic, intellectually challenging, and partly formalizable and empirical. Donald Schon, forever tied to the notion of the designer as a reflective practitioner, challenged the 'design science' movement, claiming that it was unsuitable for "messy and problematic situations" (Schön, 1983). Schon's preference of an artistic and intuitive approach to problem solving is in stark contrast to the simplified models of identification and resolution. Schon goes further to articulate that "the designer constructs the design world within which he/she sets the dimensions of his/her problem space and invents the moves by which he/she attempts to find solutions" (p. 11). **To an inexperienced designer, Design is beset with contradictions - from a longing for process to a desire to imagine.**

Two influential authors contribute further to the depth of study and research surrounding design thinking - Bryan Lawson's "How Designers Think (Lawson, 1980)" was first published in 1980 and Nigel Cross's deliberations on "Designerly ways of knowing" (from 1982 to 2007). Moreover, as design research expanded in depth and rigor over the latter part of the 20th century, it has created a tension-filled

backdrop to the ascendance of an overly simplified, shallow version of design thinking, one that, to the consternation of many designers, has gained popularity within business settings.

We will use the phrase “popularized design thinking” (Kolko, 2018) to describe the five-stage process that has been promoted by IDEO, the Stanford D School and a collection of global business schools. The five stages - empathy, define, ideate, prototype and test - are often captured in linear graphic designs, and are expounded upon in design thinking sessions that are high-energy, short-duration affairs that are characterized using post-it notes and low fidelity prototypes.

Similarly, two authors are attributed to the surge in popularity of popularized design thinking - Tim Brown’s (former CEO of IDEO) “Change by Design: How Design Thinking transforms organizations and inspires innovation” (State of Design: How Design Education Must Change | LinkedIn, 2009.) and Roger Martin’s (former Dean of Toronto’s Rotman Business School) “The Design of Business: Why Design Thinking is the next competitive advantage”. Tim Brown has offered a description of popularized design thinking - “a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success” (*IDEO Design Thinking*, n.d.). In the face of a myriad descriptions of design that are fluid, vexing and sometimes opposing, who could resist such a simplification of design?

As with many design movements, there has been a predictable backlash against popularized design thinking, with Jon Kolko’s “The divisiveness of design thinking” (Kolko, 2018) detailing the complaints of Nussbaum that “design thinking is a failed experiment” (Nussbaum, Bruce, 2011) and Vinsel’s provocative statement that design thinking is “kind of like syphilis” (Vinsel, Lee, 2017).

Moreover, as we consider our own positionality, it is worth noting, regardless of the oversimplification and flaws of popularized design thinking, that it is indeed a digestible gateway into the world of design. This may irk those designers with decades of experience, but as design moves towards participation and away from the notion of the expert designer, simplifications, or accessible models are required to facilitate the sharing of approaches and concepts.

Furthermore, it is the simplicity of popularized design thinking, accompanied by a steady diet of articles from FastCompany, the Harvard Business Review and IDEO that has fed a burgeoning interest in design, that has ultimately led to the emergence of design roles within leadership teams and Board level positions.

In the Winter of 2024, Stanford’s own Social Innovation Review, declared that (popularized) ‘design thinking misses the mark’ (*Design Thinking Misses the Mark (SSIR)*, 2024.), and that it has ‘failed to solve the world’s thorniest problems.’ The authors - Fayard & Fatallah - go on to describe design thinking as reductive, formulaic, and decontextualized.

However, given these contentions, it is worth revisiting what is often described as ‘designerly thinking’ - a deeper appreciation of design methods. Designerly thinking is attributed to one of the most cited writings on design and designers, Nigel Cross’s “Designerly ways of knowing” (Cross, 2007). Cross provides a collection of key insights into the nuances of design work/process, many of which have been distilled into ‘popularized design thinking’, including:



- Scientists' problem-solve by analysis, whereas designers' problem-solve by synthesis (Cross references Lawson's study that compared scientists and architects)
- A reliance on quickly generating a range of satisfactory solutions rather than one hypothetically optimum solution (prototyping)
- The Designer is constrained to create a practicable result within a time limit, whereas scholars and scientists may simply call for more research to be done.
- Designers tend to seek a primary generator that defines the limit of the problem and suggest the nature of the problems solution. (framing)
- Designers tackle ill-defined problems, and their approach is constructive, which Cross deftly describes as "invention comes before theory" and the "world of doing and making is usually ahead of the world of understanding."
- And finally, from our perspective, Cross's most astute observation, that Designers possess a "metaphoric appreciation" - an ability to use a "kind of reasoning that scans a scene and sizes it up, packing into one instant's survey a process of matching, classifying and comparing."

Long before the emergence of criticism surrounding design thinking, systems thinking approaches were being embraced to tackle the complexity of wicked problems. However, much like design, systems thinking is an elusive concept. In "A definition of systems thinking: a systems approach" (Arnold & Wade, 2015), Arnold and Wade propose that although systems thinking is "widely believed to be critical in handling the complexity facing the world in the coming decades; it still resides in the educational margins" (p.669).

Let us pause for a moment and consider that after wrestling with the nuances of design and designerly thinking, designers must further embrace the complexities of systems thinking. Returning to our own experiences, this mix of vexing disciplines creates a long-lasting sense of unease and ambiguity for inexperienced designers.

Arnold and Wade provide a review of scholarly definitions of systems thinking from the 1960s onwards and conclude that systems thinking, is, a system, one that contains "common elements (that) tend to include interconnections, the understanding of dynamic behaviour, systems structure as a cause of that behaviour, and the idea of seeing systems as wholes rather than parts" (p.674).

Subsequently, with the rise of globalization and digitization, our world appears to become more interconnected and interdependent, with actions in one area, location or system affecting another. The lure of systems thinking is that it offers "hope to better understand the deep roots of these complex behaviours in order to better predict them and, ultimately, adjust their outcomes" (p.670). Further, Pourdehnad et al (Pourdehnad et al., 2011) argue for an integration of systems and design thinking, indicating that the foundation of a system "brings the whole system to the discussion from the beginning" (p.6). Armed with this understanding, a combination of design and systems approaches offer opportunities to shape our futures.

Valtonen (Valtonen, 2020) asserts that 'Design practice is intrinsically about change and changing the world.' In articulating the premise of a **strategic designer**, we turn to "Design Research, an oxymoron" where Krippendorff offers a futures-orientated definition of design approaches, whereby:

- "Designers invent or conceive possible futures, including its artifacts that they may be able to bring about, imaginable worlds that would not come about naturally" (p.71) Design is fundamentally tied to conceiving futures that could not come about without human effort.
- "Designers need to know how desirable these futures are to those who might inhabit them, and whether they afford diverse communities the spaces they require to make home in them" (p.71)
- "Designers experiment with what is variable or could be changed" (p.71)
- "Designers work out realistic paths, plans to proceed towards desirable futures" (p.71) (Krippendorff, 2007)

In Krippendorff's design world, the designer is an agent for future change. Indeed, Nelson and Stolterman (Nelson & Stolterman, 2012) go further and describe the process of design as "an act of world creation"(p.201). Subsequently, a strategic designer is one that grapples with the complexities of inter-connected systems, identifying how those systems connect and iterating towards interventions and proposals within the system which will ultimately lead towards a preferred future.

From our rapid and flawed journey across design history - we are reminded of the depth and complexity of Margolin's two volumes of the history of design - we arrive at the conclusion that what is being designed has changed. Yes, artifacts could always be considered as prototypes of a desired future, but there are differences in complexity and impact from the act of creating products for mass production to the acts of identifying, persuading, and co-creating changes in complex, inter-connected systems. It may indeed be part of the human condition, but life always seems more complex in our own timeline.

Moreover, some may argue that the foundational aspects of design and being a designer have not changed - in trying to understand something, we create prototypes to move us towards a different future. Indeed, Nelson and Stolterman argue that fire wasn't discovered, it was designed. However, accepting the premise that a designer intends to create desirable futures, it behooves us to consider that designers need to be more than naturally curious. They need to be proficient in understanding complex and interdependent systems, they need to understand behavioural change within people and organizations, and they need to embrace an ever-expanding range of tools and technologies that are now embedded within design work.

This is where our collective heads begin to spin. As inexperienced designers, hoping to design futures, we quickly become overwhelmed by the prospect that every design action has future consequences, both intended and unintended. Further, before even starting a design project, we should be meaningfully discussing the notion of 'Should we?' Against this backdrop, even the most optimistic, inexperienced designer can become paralyzed by scope and responsibility. Here, we ponder where do inexperienced designers find the resources, frameworks, and communities to feel more confident in their future aspirations?

Where indeed? Let us turn now, to how Education providers have responded to the challenges of design and increasing complexity.

## Scene II - Design Education Approaches

Within this scene, we will consider three thematic areas: definitions of design expertise; responses from higher education; and the potential of a custom, niche inspired approach to developing a design practice.

### Definitions of Design expertise

Although the terrain of design may have changed - from aesthetic to systems - we assert that Cross's Designerly ways of knowing (Cross, 2007) are still applicable to designers of the future, especially as prospective traits to assist novice designers in their personal and professional growth. Cross's description of framing and the seemingly innate ability of designers to size-up and consider multiple options (metaphoric appreciation) are challenging concepts to inexperienced designers. How does one frame and reframe a problem space? How does one consider competing alternatives in a timely manner without residing in a perpetual state of 'fear of missing out'? Again, to the inexperienced designer, these processes can appear out of reach, an unobtainable, seemingly supernatural ability to look at things differently and to intuitively select the best way forward.

This leads us to ponder how aspiring designers can enhance their practice and ultimately progress through levels of design expertise. Moseley et al assert that an "individual's design thinking capability is best acquired through practice, application and experience"(Mosely et al., 2018, p.178). Lawson and Dorst (Lawson, 2005) suggest that there are seven design expertise levels, including: naive, novice, advanced beginner, competent, expert, master, and visionary. Within these levels of expertise, designers evolve in their types of thinking, ranging across result-focused; convention-based; situation-based; strategy-based; experience-based; developing new schema; and redefining the field.

Given Dorst and Lawson's definitions of design expertise levels, we would imagine that a graduate of a Masters Design Program, especially those with no prior design experience, would be betwixt the novice, someone that "understands that design problems are individual and situated, and reacts to them and possesses design language" (Mosely et al, 108, p.179) and the advanced beginner with abilities to "steer the development of the design problem and see the bigger picture"(p.179).

If we further imagine progress towards competent and expert levels, this is where the aspiring designers may feel their anxiety levels rising and their self-confidence dipping. Lawson (Lawson, 1980) asserts that non-design students default to problem-focused strategies, adopting scientific approaches of analysis. Conversely, competent designers embrace a solution-focused mindset, generating multiple solutions to problems.

Cross et al (Cross et al, 1990) goes further and describes expert designers as capable of producing "novel, unexpected solutions" with an ability to "tolerate uncertainty, (and) working with incomplete information". This mirrors Dorst and Lawson's definition of designers that have progressed to higher

levels. Their description of competence seems achievable for the non-designer, as it involves developing abilities to “tolerate ambiguity and actively steer the development of a design problem”. However, the leap to expert seems almost magical and transformational as experts are described as possessing “an implicit recognition of situations and a fluent, intuitive response” to design challenges.

Most notably, to develop design expertise, to traverse from novice to expert, Mosley et al, 2018 note the criticality of the levels of expertise in those facilitators that are developing and delivering design-orientated learning experiences. Subsequently, we turn our attention to traditional higher education programs and the potential promise of individualized design-led learning journeys.

Higher education offerings - whether undergraduate or graduate programs - remain a consistent method for aspiring designers to enter the profession. However, the structure and applicability of design programs and their implied effectiveness are under review. Indeed, the Future of Design Education Initiative, launched in 2021, is a collective of industry practitioners and academics that are investigating alternative approaches to design education. From their collective publications, we see strong parallels in their observations regarding the changing nature of design with our own initial thoughts - namely, in ‘rethinking Design education (Davis & Dubberly, 2023)’, Davis and Dubberly assert that design is in the middle of a paradigm shift, from the aesthetic, production-focused leanings of the original industrial revolution towards the complexity and interconnectedness of the fourth industrial revolution. Moreover, Davis and Dubberly offer ten principles for today’s designers, which include: “think in terms of systems; consider consequences, intended and otherwise; view data as the new material of design; and decenter humans to restore and sustain ecological balance.”

In defining our intended scope for investigating the education of designers, we have purposefully focused on the following areas:

- **Graduate programs:** We argue that Graduate programs, typically two to three years in length and available in full-time and part-time options, create the most recognizable gateway for ‘non-designers’ (aspiring designers without an undergraduate degree in a design discipline) to enter the design community. Moreover, as Davis and Dubberly assert, the revenue generated from such programs is critical to Design Schools and that such programs are intended to create a sense of status - criteria that will likely lead to a continuing surge in the development of new graduate programs.
- **Futures Focused:** We return to our belief that all design is inherently future focused and in doing so, we have focused on those graduate programs that are related to designing futures/foresight/futures thinking.
- **Established/ranked institutions:** The ranking of educational institutions is a divisive topic, with many institutions relying on public perceptions and historical legacies to attract students. In our brief review of design futures related programs, we have focused on ranked/established design schools, as these institutions attract significant numbers of students. Again, we note the reliance on information and perspectives from Western education models and approaches.

**Appendix A** provides a summary of the reviewed educational programs.

Subsequently, albeit from a review of only a dozen internationally ranked Design Schools, we conclude that in graduate programs that focus on designing futures, either explicitly or implicitly, that design methods are either assumed or overlooked. The research-intensive nature of graduate programs promotes theory over practice. Where foresight, strategy and futures thinking are prioritized, the focus appears to be on the identification of drivers of change and potential levers of intervention, and not on designing and delivering the change that will be required to achieve such preferred futures. We assert that creating such behavioural change requires an expertise in design methodology.

Clearly, it is challenging for Design Schools to create programs that meet the needs of both experienced design professionals, and aspiring designers from non-design fields/backgrounds. Design Schools cannot assume a foundation in design history, facilitation expertise and design methods. Balancing content and time add further complexity to the creation of a program that empowers novice designers. Despite these constraints, we believe that much can be gained, whether in additional courses, summer electives or in-person bootcamps, from adopting Pontis and van der Waarde's (2020) recommendations for cultivating designers' professional practice. Their recommendations, which are intended to help future designers grapple with complex, unframeable design contexts, include:

- **Creating a deeper appreciation of the design process:** the authors call integral introductory courses that focus on "exploratory and evaluative user-centered research, analysis and synthesis, conceptual design, prototype...and implementation" (p.238). They assert that students would learn to see the value of the early steps in the design process and learn to make better sense of the problem and people's needs.
- **Focus on problem definition:** Here, the authors present a call for explicitly teaching the difference between problem finding and problem solving. They argue for the addition of systems thinking and creative offerings to increase the ability of students to develop their questioning skills - a trait they deem essential for ambiguous situations.
- **Add user-centered research throughout:** The need for design research is re-framed as a method of supporting "the various steps in the design process by providing objective evidence and external input." (p.239)
- **Establish stronger cross-disciplinary collaboration:** Going beyond collaborative group projects, the authors promote the benefits of exercises with students from other disciplines and different institutions, where students "increase conversations with other disciplines and expose students to other ways of thinking and problem solving." (p.239)

Indeed, if Pontis and van der Waarde's recommendations are either assumed to be happening within established curriculum or simply omitted as there is not enough time within traditional educational structures and schedules, then perhaps, designers should seek alternative methods of design education.

## Towards an alternative Design Education

Roger Martin (Martin, 2022) ably captures the conundrum of graduate education - "For students, the practitioner insight is simple. If you want to learn tools and techniques for analyzing and optimizing what is, go to business school. If you want to learn tools and techniques for creating what does not now exist, go to design school. If you want to learn both, you will need to be creative and proactive" We would contend that aspiring designers of futures need to be able to identify and interrogate 'what is' and iteratively create "what does not now exist".

Subsequently, if such combined experiences do not currently exist in business schools or design schools, we pause to consider alternative methods for experiencing design education. We acknowledge that even the most thoughtfully constructed graduate program would need to be continuously revised and modified to meet evolving student and societal needs.

Indeed, as with all professions, formal education is simply one part of the learning mix, and both novice and advanced practitioners can benefit from membership in communities and developing their own learning practice. Given the rising costs of traditional education, we turn to the niche discovery tool to consider potential elements of a personal learning environment. The niche discovery framework is useful in framing a system and offers an iterative opportunity to consider current small market offerings that typically serve those users that are willing to take risks (time/financial/suitability) to invest in opportunities that meet their specific needs, As such, niche offerings may be described as "peripheral to the mainstream...and too small to be considered a threat to the current system(*Design Journey through Complex Systems, Jones, Peter & Van Ael, Kristel* p. 58)". Essentially, by reviewing such niche providers, we hope to uncover emerging and alternative pathways for design education.

**Appendix B** contains a more in-depth review of these emerging market entrants from across Europe and North America and the completed Niche Discovery Tool.

By analyzing the differentiating traits of such niche providers, we can construct a 'DNA' or design criteria for alternative design education models. Such niche traits demonstrate emerging pathways which may be leveraged to spark systemic change initiatives. Further, these traits typically describe what is currently unavailable or under-serviced in traditional, graduate program offerings from Higher Education establishments.

Moreover, these signals from the near future may also be used to craft personal, design- infused journeys of learning, independent of a single educational provider. We offer the following collection as potential points of interest for those designers, or education providers, who wish to create alternative learning pathways.

**A practice of practice** - We believe that the Experience Institute maxim of the transformational power of experiential learning is ideally aligned with the needs of designers. Traditional educational providers are adept at research and theory but struggle to create meaningful experiences for novice designers to immerse themselves in authentic design cycles. Prioritizing opportunities for practice, review and reflection are pivotal for novice designers.

**Cohort Learning** - IdeoU, the Institute for the Future and Maven all espouse the value of cohort-based learning, with the assumption that members of the cohort have either actively chosen to be part of the learning group or have demonstrated their passions and interest via a bespoke application process. There is a rich academic history of the value of peer-driven learning, and cohort learning builds upon this foundation.

**Customizable learning experiences** - learners can select the individual offerings that best match their interests and the costs of trying out new experiences are relatively low when compared to traditional higher education programs. Traditional programs may still promote their accredited credentials, but as learning continues beyond the walls of ivory towers, learners can craft their own custom journeys - journeys that can be stopped and restarted or changed without the overhead of a long-term commitment.

**Barrier free access to professionals & the magic of mentors** - Whilst higher education offerings typically have one guest speaker (either from industry or research) during a course, these emerging offerings feature almost real-time access to working professionals. The value proposition of The Future, Maven and the Dyson Institute are intrinsically tied to the promise of feedback and regular consultations with industry professionals. Mentors play an important role in all professions, but perhaps even more so in design, given the nonlinear aspects of the process. ADPList provides a connecting service for inexperienced designers and veteran professionals.

**AI Augmentation** - Whilst generative AI is still in its relative infancy, Synthetic Users and Board of Innovation suggest that design and innovation practices will be impacted by future AI technologies. At the time of writing, Open AI has provided the ability for users to create their own customized chatbots that can be restricted to specific libraries and collections of content. In 2023, Inflection AI released PI - a Personal Intelligence service that offers assistance and advice via a "supportive and empathetic conversational AI". We imagine that such services could be used by novice designers to discover past designers e.g., the Eames Institute could provide an AI interface to their vast collection of artifacts.

Designing your own design journey involves some degree of risk and a level of confidence that may be absent in novice designers. Aspiring designers may still favour traditional higher educational offerings as they are linked to accredited certifications. However, with initial advice from mentors and industry professionals, individuals may become better placed to research, define, and design their own learning experiences.

### Scene III - Our definition of design

Having considered the changing role of design and designers, ruminated over the value of design history, and evaluated potential education pathways for designers, we arrive at our definition of design. A definition that we will use, as we further examine our research question – *How might we equip inexperienced designers with the confidence and agency to become effective shapers of these futures?*

Throughout this research journey, our depth of understanding of the design process and appreciation for designers has grown considerably. Our thoughts have been influenced by a variety of mediums, from research articles and journals to video documentaries and an ever-growing collection of podcasts. Within this section of the report, we feature those comments that have stuck with us, the ones that have left the biggest impression on our thinking and our own aspirations for growth. Our hope and intention is that this scene is perceived as a winding road with memorable pit stops.

We begin with a beautifully distilled description of design from Paola Antonelli, the senior curator in the Department of Architecture and Design at MOMA. In the 'Design Better' podcast of November 2023, (The Curiosity Department, 2023) Antonelli offers that although defining design is a slippery business, a definition of design would include "a coming together of goals and means. You have a goal, and the goal can be functional, and the means are the materials. So, there's not much difference...between wood and code". In effect, the materials may have changed, but the purpose of design is linked with future functionality.

Antonelli shares MOMA's changing definitions of design, from their Bauhaus beginnings to a definition which now aligns with a broader interpretation of design, whereby their focus is on "design that has an impact in trying to make the world a better place".

We are aligned with Alice Rawsthorn's assertion that 'Design is an attitude'.(Rawsthorn, 2018) Rawsthorn explains that change, which we would interpret as design for a future state, is central to the role of the designer. She adds "In all of its mani-fold guises, design has always had one elemental role as an agent of change that interprets changes of any type — social, political, economic, scientific, technological, cultural, ecological, or whatever — to ensure that they will affect us positively, rather than negatively". Further, Rawsthorn imagines a growing number of designers becoming "attitudinal", which requires a commitment to understanding complex, global, and systemic issues.

The inspiration for Rawsthorn's observations are rooted in the work of László Moholy-Nagy - a renowned painter and activist credited with founding the School of Design in Chicago in 1939. Moholy-Nagy's posthumously published work "Vision in Motion" serves as a manifesto outlining his vision for the fusion of design, art, technology, and creative education and their societal significance. In this seminal work, Moholy-Nagy asserts that "Designing is not a profession, but an attitude," (*Moholy- Nagy, Laszlo Vision in Motion, 1947*) underscoring the necessity for designers to cultivate specific mindsets and skills.

Antonelli's socially oriented definition and Rawsthorn's reframing of the designer's role, encourage us to pause and re-consider our own constructs of the **maker** and **strategic designer**. Where should the novice designer focus their efforts? On aspiring to become a maker designer that thoughtfully crafts human-



centered outputs or on the promise of the strategic designer, who can grapple with complexity? Here, we turn to the reflections and advice of the acclaimed designer, Don Norman.

In his discussion on the future of design, Don Norman introduces a pivotal concept for designers, likening it to a crucial decision point “when you come to a fork in the road, take it”, (Norman, 2017) Designers are urged to contemplate two diverging paths: one following the traditional course of design evolution, emphasizing craftsmanship and emotional enrichment in products; and another path rooted in design thinking, focusing on identifying and solving problems to enhance human well-being, enrich work environments, and address environmental sustainability challenges.

Norman underlines that this decision shapes the potential trajectories for design. While some may choose one path over the other, there is a possibility of navigating both concurrently. The evolving role of designers necessitates a comprehensive understanding of these paths. Norman highlights the distinction between academia, which cultivates thinkers, and the practical realm of designers, which nurtures doers. He emphasizes that the multifaceted global issues that we all face, call for a collaborative effort between these two types.

Moreover, Norman accentuates the significant influence design wields in molding society and fostering innovation. He posits that design inherently focuses on the future, leading us towards improved prospects by conceptualizing and actualizing fresh opportunities. Designers serve not merely as producers of objects but as **agents of transformation**, adept at tackling intricate dilemmas and steering endeavours towards favourable conclusions.

Aligning with this perspective, Nathan Shedroff, " (Design Is Evolving—and Designers Need to Evolve with It. – The Team W, Inc., 2021) asserts the evolving role of designers. Shedroff advocates a shift from solely advocating for the audience to championing broader causes such as democracy, society, and environmental sustainability. This expanded role presents a new mandate for designers in shaping a more sustainable and inclusive future.

However, before rushing to accept the mantle of agents of transformation, designers need to accept their own culpability in contributing to the creation of such interconnected, global problems. Space10, the Danish research and design lab that has recently ended a ten-year engagement with the global furniture maker, IKEA, offers an abrupt description of the responsibility of designers by stating “We have designed our way into this mess - can we design our way out of it? (Albino, 2021)”. This sentiment is further expounded in Mike Monteiro’s “Ruined by design: how designers destroyed the world, and what we can to fix it”(Ruined by Design, n.d.). Essentially Space10 and the provocateur Monteiro are demanding an emphasis on design ethics and a shift away from human-centered design to planet-first design.

Similarly, Tom Lloyd's contemplation concerning the contemporary role of designers provides insight into the dynamic landscape of design practice (Tom Lloyd on What Being a Designer Means Today, 2021). Amidst swift technological progress, socio-economic transformations, and environmental concerns, designers assume a crucial position in managing ambiguity and intricacy. They transcend the role of mere problem-solvers by acting as interpreters, integrating varied viewpoints, and collaboratively devising solutions that cater to the diverse requirements and ambitions of individuals and societies. He sees designers as changing the relationship people have with the built environment and proposes that the very vocabulary of how we define design is changing:

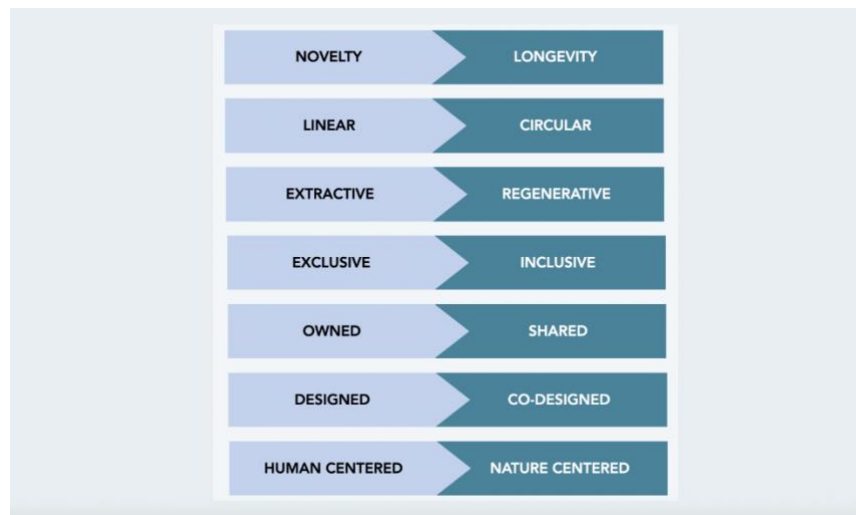


Figure 4: Tom Lloyd's proposition of the changing definition of design

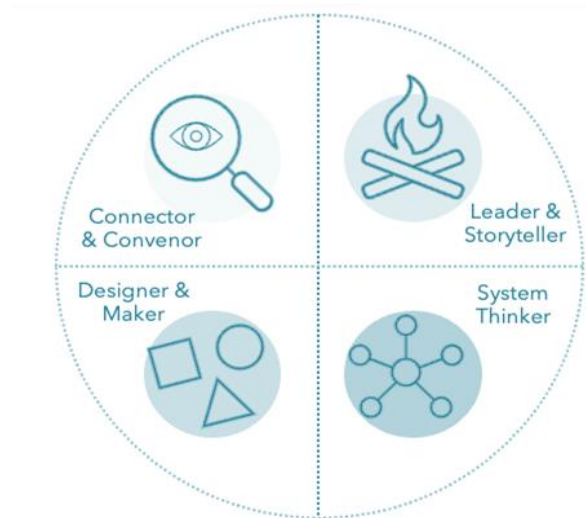
The assertion that "As designers and humans, we are participants in this system" underscores the significant role designers hold in driving and adapting to change within society. Viewing design as a transformative force that shapes individuals' interactions with the world reflects a paradigm shift towards a more dynamic, adaptable, and forward-thinking profession compared to traditional perceptions from design education.

Whilst we agree with Rawsthorn, Norman and Lloyd on the premise of the evolution of the designer as the complex problem solver, we also align with the sentiment and provocations within Jarret Fuller's essay "what if design isn't problem solving?(What If Design Isn't Problem Solving? | Blog—Jarrett Fuller, n.d.) Within the essay Fuller references an interview with Dan Hill, Director of the Melbourne School of Design. Hill pushes back on the 'designer as problem solver trope" and states "We're not that good at problem-solving, to be honest...what designers are doing is cultural invention. They are inventing new things, which is different from problem-solving."

Fuller provides a further explanation of cultural invention which aligns with our own contention that design methods matter. The author provides additional support for the premise of the cultural inventor by describing that this frame "gives space back for the designer's point of view. It makes space for radical decisions, unexpected innovation, and cultural significance."

We are struck by the notion that even within our culminating scene of Act 1, that we are still struggling with a definitive definition of design. However, as we return to the guiding methodology of this report,

we gain further appreciation from the Design Council's nuanced Systemic Design framework (*Systemic Design Framework - Design Council, 2024*). The response of the Design Council to the evolving design landscape highlights the necessity for a transformative shift in design and was based on insights from interviews with people who had been involved in large scale systemic change projects.



*Figure 5: The Systemic Design Council UK's view of the kinds of people involved in systems change projects,*

In addition, they noticed that there was a pattern inherent in the kinds of people who were involved in these systems change projects, leading to a summary of four key characters. They posit that designers need to play all these key roles when tackling systemic issues: they **are systems thinker, leader and storyteller, designer and maker, connector, and convenor**. However, it is worth noting that all these characteristics **need not only be found in one person**, but they can also be achieved through the formation of a **design team**.

The role of a **Systems Thinker** is characterized by their adeptness at navigating intricate, interconnected systems and deciphering their dynamics. By conducting thorough analyses of the

relationships and interactions within these systems, they can pinpoint patterns, influential points, and unintended repercussions. This aptitude for systems thinking proves invaluable when confronting systemic issues, empowering designers to comprehend the broader contextual framework in which problems manifest. By concentrating on fundamental causes rather than surface-level remedies, systems thinkers play a pivotal role in formulating more efficient and sustainable solutions. Within collaborative teams, they frequently assume leadership responsibilities, steering conversations, synthesizing information, and maintaining a strategic focus on addressing systemic challenges.

Similarly, the roles of **Leader and Storyteller** in design ventures are crucial for inspiring and mobilizing team members. Through the articulation of a captivating vision and narrative, they infuse projects with purpose and significance, fostering dedication and support from stakeholders. Leadership and storytelling are essential for aligning diverse interests, fostering consensus, and propelling transformative change. In collaborative environments, these individuals typically hold central positions, coordinating efforts, facilitating cooperation, and providing regular updates to stakeholders.

**Designers and Makers** play an essential role in translating ideas into tangible solutions, bridging the gap between conceptualization and execution. By leveraging creativity, technical proficiency, and design principles, they craft innovative, user-centric solutions. Their expertise in design thinking and prototyping facilitates swift iteration and enhancement based on user input. Within collaborative teams, designers and makers lead the implementation phase, collaborating closely with teammates to actualize concepts and ensure alignment with project objectives.

The **Connector and Convenor** role facilitates collaboration and knowledge exchange among diverse stakeholders. Through establishing networks, nurturing relationships, and encouraging interdisciplinary dialogue, they foster synergy and shared intelligence. These individuals serve as enablers of interdisciplinary collaboration, propelling innovation and cultivating a sense of community within and beyond the team. In collaborative contexts, connectors and convenors lead workshops, meetings, and brainstorming sessions, fostering engagement, and promoting inclusivity.

## The Designer of the Future

Finally, we arrive at our destination, albeit a destination that is constantly changing and forever the topic of discussion and debate - **what is design and the role of the designer?** Collectively, we believe that design is an inherently optimistic practice - one that dares to anticipate tomorrow and take active steps towards realizing a preferred future. Design is more than analysis and synthesis and requires a point of view and a spirit of invention. We have deliberated over the nuanced differences and significant overlaps between the maker and strategic designer and concluded that the humble designer is a **collaborative shapeshifter**, one that can connect across disciplines and cultures. In learning from history, designers must embrace the consequences of their decisions and promote ethics over aesthetics. Subsequently, designers of the future need to possess the practical tenacity to iteratively improve current systems and the desire to radically reimagine future systems.

Ultimately, we subscribe to Manuel Lima's description of the designer of the future, that they are a "mix of psychologist and anthropologist, system theorist and futurist, activist and reformer"(Fuller, 2023). Lima adds that the 'designer of the future has a deep understanding of the human mind and the interdependent social fabric it inhabits, as well as the inherent complexities of ecosystems, both natural and artificial, that support our planet".(Lima, 2023)

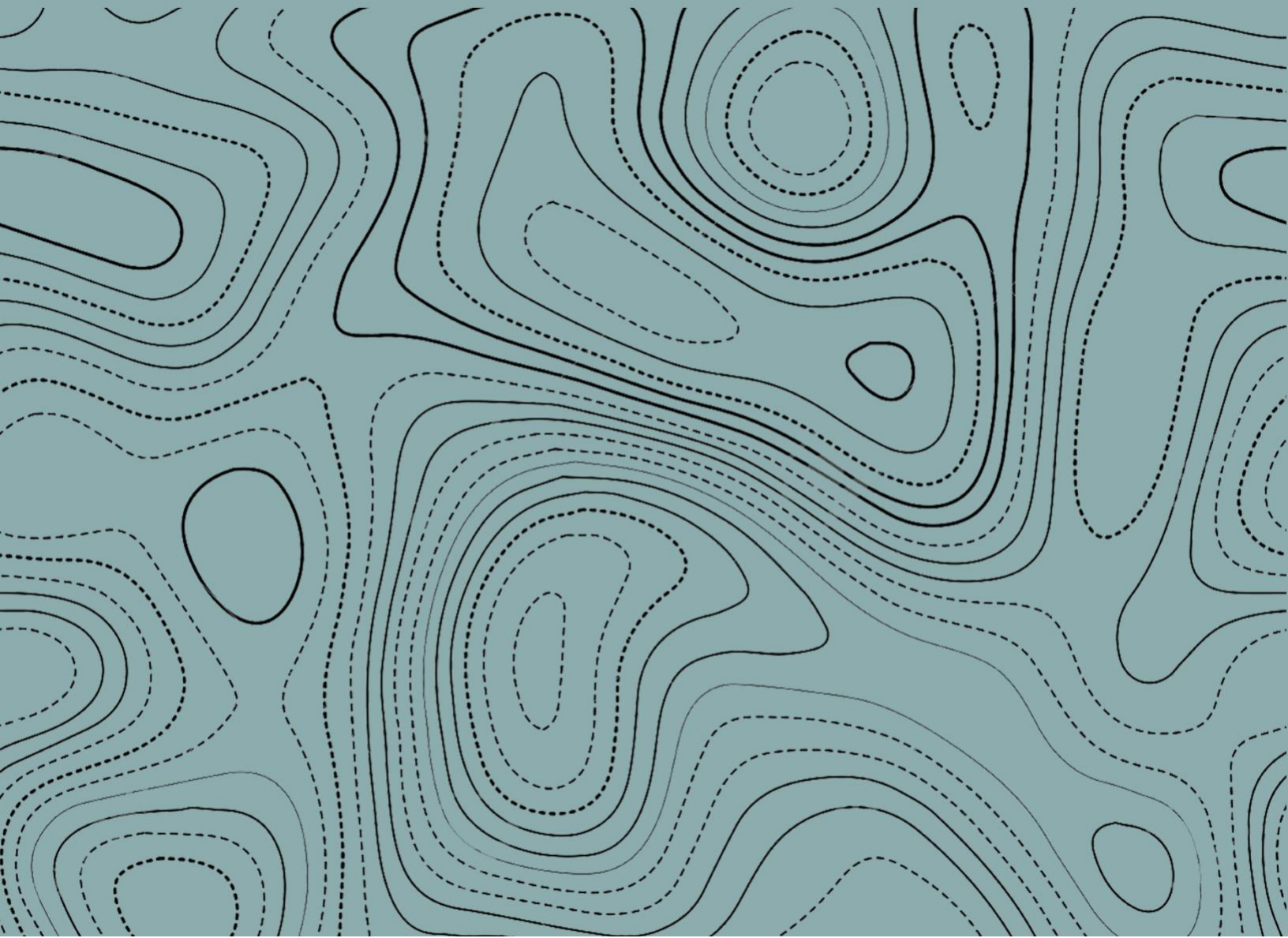
The concept of Lima's new designer, epitomizes a paradigm shift towards a versatile professional who transcends conventional disciplinary confines, fosters collaboration, and upholds ethical and inclusive design practices. Given these aspirations, the remainder of this report will focus on observations and insights from design professionals, leading to practical tools to assist novice designers in becoming such designers of the future.

## END OF ACT I

**ACT II**

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# Towards a Design practice



## ACT II: TOWARDS A DESIGN PRACTICE

### Scene I – Doctors’ doctor and Lawyers’ lawyer, but what do designers do?

The motivation for our research survey and interviews are three-fold. Firstly, to achieve an improved understanding of what designers currently do, in their day-to-day practice as designers. Secondly, an identification of aspects of the design process and the designer’s role that are changing - what is the future role of the designer? Thirdly, we hope to uncover habits of practice that can be used as a framework to assist novice designers in their aspiration to become a designer of the future – essentially, answering how might inexperienced designers be better prepared to thrive in complex and ambiguous settings?

#### Background of survey respondents and interviewees

Of the forty survey respondents, 62% fall into the age groups of 35-54, with 25% in the 18-34 age ranges. The distribution of work experience is remarkably similar across three areas, with 5-10 years of experiences, 11 - 20 years, and 20 - 24 years all exhibiting approximately 25%. In relation to specific design experience, our survey attracted respondents with a depth of professional experience, with 25% possessing 5 -10 years of design experience, 12% with 11 - 14 years’ experience, and 40% with over 15 years work experience.

We interviewed a total of eighteen participants, whose ages spanned from 24 to 68. This range allowed us to capture the perspectives of both recent graduates and seasoned veterans in the design field. The geographical reach of our study was also noteworthy, with participants coming from Singapore, Ontario, Illinois, and New Brunswick.

The educational backgrounds of the participants reflected a mix of undergraduate and postgraduate design programs. Over half (11 out of 18) possess a master’s degree in design or a related field, while nine out of eighteen hold bachelor’s degrees in various design disciplines. In terms of current professions, nine participants were actively working in design fields. Six individuals hold the specific title of "designer" within their organizations; however, the remaining professionals encompass a spectrum of titles, including design researcher, service designer, and creative director, showcasing the expansion of design practice and the emergence of innovative specializations that fuse design principles with fields like business, technology, and social sciences. Examining these varied career trajectories not only underscores the adaptability of design professionals but also offers valuable insights into the evolving requirements of the contemporary design landscape.

#### What do designers do?

The motivation for our research survey stems from a desire to better understand the role of the designer, building on our assertion that design is inherently futures-focused and that in designing for future states, designers bear a growing sense of ownership and responsibility. From our own collective positionality -

as prospective graduate students without a design undergraduate experience - we seek to better answer the rudimentary, yet vexing question, what do designers really do?

From a lay person's perspective, other professions seem much more, for want of a better phrase, describable. Indeed, if we embrace the premise of the time-strapped elevator pitch for describing professions, we imagine that the designer may have to make multiple elevator trips to communicate their activities to an increasingly exasperated fellow traveler. It is likely too simplistic to assume the straight-forward, stereotypical assumptions of the working ways of doctors and lawyers - after all, a doctor may specialize in a range of disciplines from paediatrics to geriatrics, and yet there is a consensus and shared understanding that doctors provide meaningful health related services. From a societal and cultural perspective, we inherently understand that doctors' doctor and lawyers' lawyer.

The general reputation of the designer is still intrinsically linked to aesthetics i.e., the designer phrase, often denoting a premium focus on materials and manufacturing methods, is readily associated with fashion, interior and product design. If we imagine an audience responding to the question of 'what designers do?' Some may make the leap to digital design, especially given the prominence of design in smartphone experiences, but we wonder how many people would make the connection between design and services, experiences, and ultimately, designing futures?

### **The Designer Identity - from Maker to Strategist?**

Our questions related to defining designer types were structured to elicit responses to the premise that design and designers have changed. Specifically, the question "do the terms maker designer and strategic designer resonate with you? Would you suggest different classifications?" sparked the most vociferous and nuanced responses.

While the definitions - maker and strategic - are agreed upon as readily understandable, essentially two camps of opinion have emerged. Almost half of the respondents relate to the terms and feel that they personally describe their own professional journeys, having to move towards the creation of digital outputs and, more rarely, systems focused solutions. Of the two terms, 'strategic designer' appears more palatable and relatable to the respondents. The rise of digital design, a focus for many respondents, has likely reduced an affinity with the act of making. However, a significant proportion of respondents, typically with design work experience more than ten years, willfully articulate that 'design is design' and that designers are both 'makers and strategists', offering that in fact, "designers make strategically".

Of those respondents that indicated a design role that was systems, foresight or futures related, they highlighted the need to customize their own professional title, preferring 'Business Designer' or "Design Lead" in order to indicate an alternative approach to colleagues with MBA backgrounds. While the notion of an identity crisis for designers may be an over exaggeration, there is a commonality amongst all respondents that design is ambiguous and often misunderstood, and subsequently undervalued by clients. Indeed, one response, wonderfully aligns with our opening proposition that doctors' doctor and lawyers' lawyer, stating that:



*“Which name we are called isn’t really important as long as there is a commonly used term that most people in the industry use. For example, in the medical field you have people that are called by their specialty like neurologists, cardiologists, etc. But they also all have a common term that everybody uses, Doctor. It is a universal term and everybody on the planet has a basic idea of what they do.”*

In addition to their own professional identity, respondents indicated an on-going struggle for relevance and involvement in projects. Many lamented that design thinking was now assumed to be embedded within business functions, ultimately leading to a diminishing of the importance of design, especially within digital product teams. Further, respondents articulated the difficulty in positioning the value of design-led projects/engagements, not only to clients, but also to peers and colleagues. Conversely, many respondents reported being involved in design-focused work, and whilst there may be underlying concerns over the value that design *brings to the table*, all respondents mused on the changing nature and expectations of design activities.

### **Changing nature of design and designers**

In an effort to determine the scope and scale of changes happening within the design profession - essentially emerging signals that may be useful frames of reference for novice designers - we asked respondents and interviewees to consider whether: in their professional lives, they had moved across design disciplines; what aspects of their design practice have changed; and what developments or trends that they consider will impact their practice in the future.

Whilst a significant proportion of respondents had remained within their original design discipline e.g., graphic design/information design, several interviewees had purposefully undertaken a journey of professional transformation. Of those journeys, a common transformation was from graphic design to service design and then a further shift to design strategy engagements. While the opportunities to work in complex, systems related projects appear to be relatively small, experienced designers noted that they had gained the opportunity to work on such challenging projects, by articulating and demonstrating their strategic abilities.

With respect to the changing nature of their own design practices, over half of the respondents spoke to the ever-increasing expectations and demands from clients. Moreover, respondents highlighted that iterative cycles of research and problem framing were often assumed to be part of the ‘design thinking’ process that clients expected i.e., clients were willing to compensate designers and design teams for insights, but not for research and synthesis. Assumptions regarding the deliverables from the design process were further compounded by increased expectations around digital design. While digital tools are an integral part of the design process and client communications, respondents reported increased client expectations around such deliverables and timelines. Increasing expectations - essentially more design outputs for less compensation in less time - has also shaped opinions on cultivating a discipline specialization over a generalist approach.

Some participants advocated for deep expertise in a specific design domain, asserting that such focus enables mastery of the nuances and complexities within that realm. This specialization fosters a deeper grasp of user needs, design principles, and technical proficiency. Conversely, others advocated for a more generalist approach, extolling the benefits of adaptability and proficiency across diverse design disciplines. They contended that a broad skill set empowers designers to tackle challenges from diverse perspectives and collaborate effectively with specialists from various fields. Subsequently, potential future pathways for designers may involve customized learning journeys that need to combine professional development and a deep appreciation of the designer's own point of view, i.e., their own inherent and cultivated values. Regardless of the path that is chosen, the design industry is a dynamic and ever-evolving ecosystem and one that is impacted by emerging technologies.

Our interviews underscore the imperative for designers to remain current with industry trends to sustain a competitive advantage. Participants in our study expounded on the potential influence of emerging technologies such as Artificial Intelligence (AI), Virtual Reality (VR), and Augmented Reality (AR) on the design sphere. These technologies are swiftly revolutionizing design processes and our interactions with the environment. Interviewees emphasized the necessity for designers to adapt their skills and workflows to effectively integrate these innovative tools. They stressed the significance of continuous learning and exploration to comprehend the capabilities and constraints of these technologies and how they can be harnessed to enrich design responses.

With respect to generative AI solutions, respondents offered specific examples of where their current approaches and workflows had already shifted. From image manipulation in Adobe Firefly, to formulating research interview questions with Open AI's chatGPT and Google's Gemini, to the synthesizing of insights with MiroAssist, designers are already experimenting and adapting to these emerging toolkits.

### **Designers remain optimistic.**

Moreover, the interviews yielded valuable insights into the future trajectory of design. Participants deliberated on a spectrum of potential challenges and opportunities. Among the concerns raised were the potential for automation to supplant certain design tasks, the escalating requirement for designers to possess robust business acumen, and the imperative of ethical considerations in designing and implementing solutions. However, the interviews also illuminated promising prospects on the horizon. Participants highlighted the increasing demand for design thinking across industries, the capacity of design to address intricate societal issues, and the emergence of novel design specializations poised to shape the future landscape. The move from maker to strategist seems like a logical progression for many, especially as one interviewee states, "the proliferation of wicked problems is astounding, and the lack of skills to tackle them is becoming clearer, so who better to take them on than someone whose role is fluid and constantly changing anyway?"

Having considered what designers currently do, where future practices might go and which trends and technologies will influence those directions, we turn to the habits of designers.

## Scene II - Insights for designerly habits

To assist novice designers on their design journey, we asked respondents to consider their own habits of design; practices that they wish they had started earlier; and recommendations, both practical and future career related. Subsequently, we have developed **six design criteria** that could be used as a framework for novice designers, or any designer of futures who is seeking to re-imagine their practice of design. These insights are not intended to be all encompassing, rather they are directional nudges. Again, we return to our assertion that foresight techniques, futures thinking, and strategy wind-tunnelling can only move an organization towards a path to a preferred future - design plays a pivotal role in changing behaviours and achieving future ambitions.

## Insight #1: Good Design Starts with Advocacy

*Designers need to advocate to enhance the perceived value of their own work and to substantiate the depth and iterative nature of their intended approach. Before design work can begin, designing the design work must take precedence. Ultimately, designers need to tell a better story about themselves, going beyond intended outputs to sharing their process.*

In a future where design-infused innovation could potentially be automated and research insights are gathered from synthetic users, designers must commit to crafting and maintaining a persuasive narrative that articulates the value of the designer, their design methods, and preferred processes.

The dominant design paradigm remains user-centricity and human centered design. Fuller posits that “user-centered design” should really be called “corporation-centered design” because most of the “problems” design thinking is “solving” is how to increase the bottom-line.” (*What If Design Isn’t Problem Solving?* | Blog—Jarrett Fuller, 2023). Moreover, in “Design after Capitalism”, (Wizinsky, 2022) Wizinsky proffers that “design is struggling to materialize preferable states and humane ways of being in the world”. Subsequently, aspiring designers of the future need to balance their need to compete in their current market realities with their desire to embrace emerging models that re-imagine the stakeholder and move towards planet-centric design.

Adding to the anxiety of present-day designers is the perception that, despite the rise of the Chief Design Officer role in the 2000s, design has or is losing its seat at the boardroom table (Chojecki et al., 2010) For designers of the future, those cultural inventors that wish to actively co-create desired future states, advocacy becomes essential.

Such advocacy may take the form of storytelling. In “Why storytelling should be the medium of design education” (Jain, 2023), Jain and Srivastava, justify the incorporation of storytelling as an integral and inherent skill set of a designer. Danko et al, go further and articulate that storytelling “fosters empathy, multisensory conceptualization, and holistic design, improving design decisions and work quality” (Danko, 2006). Furthermore, storytelling provides techniques and models to help clients and stakeholders imagine future states. Indeed, when articulating future problems that involve complex systems interventions, and potential scenarios that are notably different than current experiences, the narrative of storytelling may help stakeholders build a shared understanding of suggested futures.

In short, **stories can overcome the knowledge hurdles that are embedded within foresight and strategy related work and provide a compelling structure for designers to articulate their value.**

Given an increasing need to advocate for design methods, designers may wish to incorporate the following concepts within their future-focused storytelling.

**Lens of Perception:** Strive to go beyond compelling visuals and create a collection of lenses for your clients – use these to shift perspectives, focus attention and reveal overlooked possibilities. Explain how each lens brings a greater amount of clarity to the design vision.

**Future Forward:** Create vivid portrayals of the futures that you are working towards. Using metaphors and examples articulate the future that your solutions will bring forward. Populate those futures with relatable personas that resonate with your audience.

**Creative Composers:** View your advocacy as a musical composition. Data and insights are your instruments, but weave them together with storytelling, emotion, and a familiar narrative.

## Insight #2: Design is an anticipatory state of being

*Whether it's an industrial designer exploring a new material or a strategic designer grappling with complex systems, design is explicitly associated with future states, near and far. Anticipation is a positive re-frame of the angst and uncertainty that bedevils novice designers. Anticipatory states heighten our awareness of current states, helping to build towards alternative futures.*

In "towards an anticipatory view of Design" (Zamenopoulos & Alexiou, 2007) Zamenopoulos and Alexiou highlight three connections between design and anticipation. Firstly, they describe anticipation as being linked to agency and a foundational criterion for understanding reality and constructing models. Secondly, they describe the inherent paradox of design and designing, in that designing "involves the capacity to generate design solutions, in anticipation of a correspondence between the design solution and the desires and needs that motivate it." Thirdly, and perhaps most applicable to our assertion that designers play a special role, the authors state that designers aspire to "fulfill needs or resolve problems in reference to a future state of the world."

Peschla and Fundneider's (University of Vienna et al., 2016) theoretical and conceptual paper claims a close connection between design, innovation, and anticipation. The authors have created their own definition - emergent innovation - whereby designers are able to realize sustainable and radical innovations that are not merely projections from the past, but rather, that they are distilled in a process of "learning from the future as it emerges(Scharmer, 2000)".

Moreover, for the novice designer, anticipation can also be construed as a positive reframe of the anxiety that is often associated with the design processes of framing, synthesizing, and ultimately deciding upon a course of future action. Indeed, it is the open-ended nature of design and the possibility of multiple futures, that can effectively paralyze novice designers.

In considering the design of emergent futures, students, and faculty within the Institute for Advanced Architecture of Catalonia, have developed an 'Atlas of weak signals.' Like many Graduate programs in design, students come to the Institute programs from various backgrounds, ranging from political science to ecology - and as such they may arrive with little to no design experience. To introduce students to the possibility of designing for emergent futures, the Institute has developed learning experiences that focus on weak signals. Weak signals are defined by Hiltunen (Good Sources of Weak Signals, 2024) as "early indicator(s) of change that has little or no impact on the present day, but has the potential to cause a large change, triggering major events in the future". In other words, they are precursors to a possible future, a 'trend before a trend...an intermittent start".

In 2019, their collection included twenty-five signals from five groups: surveillance capitalism; Anthropocene; the future of work; after the nation-state; and exploring identity. This simple collection (the atlas) acts as a starting ground to analyze current systems and build possible scenarios, whereby students can create "design spaces" for exploration by simply combining signals from each group.

While the Atlas of weak signals is one approach, novice designers can actively hone their anticipatory skills through several practices:

**Trendspotting:** Regularly analyzing emerging trends in technology, culture, and society.

**Scenario Planning:** Exploring different potential futures and their implications for design solutions.

**User Research:** Focusing on unmet needs and future aspirations of potential users.

**Design Fiction:** Creating fictional scenarios and objects to explore the impact of future technologies or societal shifts.

By embracing design as an anticipatory state, novice designers can move beyond anxieties about ambiguity and actively shape futures.

### **Insight #3: On the road to mastery, learn from travelers**

*Inexperienced designers can learn effectively from peers and intermediate designers. Experts take short-cuts, break the rules, and may confuse novice designers. For novice designers to learn from peers, the design process needs to be reflexive and accessible. Novice designers may benefit from borrowing techniques from other professions that have codified progression.*

If we return to Lawson and Dorst's description of an expert level of design expertise, they assert that the real expert "responds to specific situations intuitively, and performs the appropriate action, straightaway. There is no problem solving and reasoning that can be distinguished at this level of working." (Lawson, 2005) This description re-affirms the notion of the expert designer as someone who simply possesses 'designerly ways of knowing', and that they can instinctively navigate complex issues. Moreover, experts can inadvertently skip cognitive steps that students need to know, further adding to the confusion of novices.

However, aspiring designers of the future need to be reminded that experts are not born, they are made - a key finding from Ericsson et al's 2006 study on "the making of an expert". (Ericsson et al., 2007) The authors description of a pathway to becoming an expert are particularly relevant to novice designers, as they articulate that "genuine expertise requires struggle, sacrifice, and honest, often painful self-assessment." Further, the authors suggest that for people to gain expertise, they must adopt "deliberate practice", which involves not only improving the skills that you already possess but extending both the reach and range of your skills.

#### **From reflection to reflexive**

Donald Schon's "The Reflective Practitioner" (Schön, 2013) is one of the most cited books in Design research. Schon described reflective practice as the practice by which professionals become aware of their implicit knowledge base and learn from their experience. From Schon's perspective, designers should not only 'reflect in action', which occurs during design activities, but also 'reflect on action', making time after the event for further analysis, synthesis, and evaluation.

From a novice designer perspective, this type of reflective behaviour is typically assumed within graduate design programs. Schon's own stance is often described as a rejection of a design as a science approach and an insistence on a prioritization of problem setting over problem solving. We assert that programs need to cultivate and promote opportunities for reflection and to encourage the development of a reflective practice towards what Schon has described as 'professional artistry'.

Moreover, as design increasingly moves towards co-design and participatory design, reflexive design approaches gain more acceptance. Pihkala and Karasti (Pihkala & Karasti, 2016) discuss "reflexivity as an orientation for engaging with the complexity and plurality of participation". Additionally, the Melbourne Medical School (Coorey, 2016) adds that researchers must acknowledge their own role in research. In



design practices, this requires the novice designer to work towards accounting for: “the cultural, political, social and ideological origins of their own perspective and voice; the perspectives and voices of those who you interview or observe; and the perspectives of those to whom you report your research.”

For the novice designer who is struggling with reflection, reflexive actions represent a further challenge. However, we believe that by sharing with and learning from peers, that novice designers can enhance their expertise. In such safe environments, where grades are no longer the priority, **process takes precedence over product.**

When considering strategies for design education, peer learning not only provides enhanced opportunities for students to learn practical skills e.g., design technologies but allows the instructor to focus on foundational theory and building a collaborative learning community. Further, such peer learning increases leadership skills and helps to create lifelong learners (Coorey, 2016). Similarly, peer learning in paediatric clinical education provides “emotional and physical support for novice nurses, enhancing their clinical competencies” (Chojecki et al., 2010)

In designing their learning journeys, novice designers may wish to consider the following criteria:

- **Recognize progress, not perfection:** Experienced designers weren't always "magical." They built their skills through trials and errors, just like you. Focus on celebrating your own learning journey and incremental improvements, not comparing yourself to someone with years of experience.
- **See experience as a toolkit, not magic:** Instead of envying "intuition," understand that experienced designers have amassed a toolbox of frameworks, methodologies, and heuristics gained through practice. Focus on acquiring these tools rather than seeking mystical shortcuts.
- **Break down the "expert" image:** Talk to and observe experienced designers closely. You'll often find they rely on the same core design principles and problem-solving approaches as you, just with more refinement and context. This demystifies the "magic" and reveals the learnable skills behind their approaches.

#### **Insight 4: Go beyond the algorithm and nurture curiosity**

*Designers need to embrace intentionality in their own practice, actively seeking out non-traditional views and perspectives. Intentional habits of curiosity, inspiration and reflection need to extend beyond social media algorithms. Going forward, designers must balance craft and experiences with AI convenience.*

Observations and interviews reveal a key challenge for novice designers – a tendency to rely heavily on readily available information sources, particularly algorithms that curate content based on past preferences. This creates an echo chamber, limiting exposure to diverse perspectives and hindering the development of true curiosity, a critical skill for designing for futures. Cultivation of these critical skills requires a shift in habits, moving beyond the curated feeds of social media and into a space of deliberate exploration. By fostering these skills, novice designers can become active participants in shaping the future, rather than passive consumers of pre-filtered information.

For designers, curiosity has been associated with enhanced creativity through idea linking - a cognitive process that “enhances idea generation beyond brainstorming” (Hagtvedt et al 2019). Additionally, dedicating time to search for inspirations is an acknowledged practice in design methods and approaches (Gonçalves et al., 2011). Subsequently, novice designers need to commit to formalizing their approach to curiosity and inspiration-seeking, likely designating actual time in their days/weeks to allow for exploration and discovery. However, educators point to the premise of the ‘information gap’, whereby students must have at least an initial interest in a topic or subject to spark their explorations - without this, students, much like novice designers, may become overwhelmed by their perceived lack of knowledge.

In the early stages of generative artificial intelligence, much has been written about the importance of prompt writing - whereby users must provide sufficient context and personas to large language models to improve the quality of the responses. Indeed, Bozkurt and Sharma beautifully describe this as “whispering to let the genie out of the algorithmic world” (Bozkurt & Sharma, 2023)

We do not imagine that the future of design will become automated. Should the dominant paradigm shift towards design with AI augmentation, then we assert that the inquisitive and creative nature of the designer becomes even more important - working with AI as a thought partner, rather than being fearful of replacement.

Our respondents suggested a wealth of inspirations including nature walks, travel, the joy of drawing and sketching, reading from multiple sources, and a willingness to explore different cultures and customs. We build upon those foundational pieces, with three suggested themes:

- **Embrace the Detour:** Step outside your comfort zone and explore unfamiliar territories by engaging with local experts (museums, non-profits, research centres) and delving into unexpected disciplines (computer science, agriculture, music).
- **Follow Diverse Voices:** Actively seek out online content from creators and thinkers outside your usual sphere. Explore the world of under-represented designers from other countries, minorities, and genders.
- **Practice Analog Inspiration:** Disconnect from digital devices and engage in low-tech inspiration gathering. Visit libraries, bookstores, or art galleries. Sketch in public spaces, people-watch, or simply take a walk-in nature. These activities can spark unexpected ideas and observations.

## Insight #5: Design literacy matters

*Design history provides context to where design has come from and what it might transform into. Knowing what has come before, even with unintended bias and consequences, builds nuance. Designers should seek out critique and challenges to their thinking and ways of working.*

We believe that there is significant value in studying design history, particularly for those novice designers who are entering the field from another discipline. We align with Victor Margolin's assertions that teaching design history offers two overarching advantages: firstly, that by studying what has gone before, students learn that there are many ways of making things; and secondly that by acquiring an understanding of design history, eras, and celebrated designers, that novice designers learn to critically evaluate such designs and push back against formal, typical European, standards. Indeed, if we are optimistic that designers of futures will embrace new tenets of design, for example planet centric approaches over people-centric approaches, then they must understand what they are rebelling against.

In 2010, Chris Pacione of the Luma Institute described design literacy as developing basic skills in "inquiry, evaluation, ideation, sketching and prototyping". The author eloquently reminds us that design can be simplified to **looking and making to further our understanding towards a future state**. Finally, Pacione argues that design should be a core requirement of all curriculums and given the same place in the educational hierarchy as English and Mathematics.

Designer and author, Jon Kolko, delves further into design literacy and describes three areas of expertise associated with building such literacy - exploration, appreciation, and expression. Under exploration, Kolko describes a competency focused on noticing our built environment and digital surroundings and then to practice "analyzing their value and efficacy, not just their aesthetic. (We have no design literacy, Kolko 2023). With appreciation, the author urges designers to acknowledge, enjoy and reflect upon their daily interactions and experiences, and question why things that we take for granted e.g. the design of our streets, are the way that they are. Lastly, with expression, Kolko articulates the necessity for designers to be able to sketch basic diagrams to convey their thoughts in a visual manner.

Further, even after establishing a commitment to design literacy, novice designers should seek out opportunities for feedback. Critique is often portrayed as stress-inducing and anxiety-ridden, a vulnerable experience where we open ourselves to the prying eyes of our peers, who stand and judge. But critique doesn't have to be scary, as Mark Lassoff, in his article, "The Gift of Criticism: How to Effectively Critique Design Work" in Medium states "Criticism is a gift, wrapped in layers of insights, fresh perspectives, and potential for growth." (The Gift of Criticism: How to Effectively Critique Design Work | LinkedIn, n.d.) Perhaps with a positive reframe, we can give critique its dues and rightful place in evaluating strengths and weaknesses. "Criticism, Lassoff states is "far from being the villain of the story, is actually the secret sauce that can help us improve our design work" (The Gift of Criticism: How to Effectively Critique Design Work | LinkedIn, n.d.)

We suggest the following two perspectives as further areas of exploration for novice designers:

**The power of context:** Design doesn't exist in a vacuum, Understanding the historical context of a design movement helps you appreciate its purpose and impact. Novice designers would benefit from exploring and comparing design eras e.g., the ornamental approach of Art Deco versus the premise of the minimalist movement.

**Design Literacy acts as a decoder ring:** By analyzing existing design solutions, from service design to product design, novice designers can use design literacy to understand the intent within design choices. What do the colours suggest? Why does this experience occur at the beginning of the interaction? By understanding such choices, designers learn to make informed choices in their own work.

## Insight #6: Design depth over scratching the surface

*The designer needs to balance the spiral of research with the ability to weigh and consider competing options. Decisions over depth and iterations present a dichotomy to novice designers. By embracing design as an attitude, design becomes both a way to be, and a thing to do.*

There comes a point in every design project, where the designer/design team must decide if they have completed enough research that either substantiates a point of view or that they must continue their research investigations. Knowing what feels like enough research or possessing sufficient information to consider competing options, is what often appears out of reach to novice designers. Further, given the over-riding constraints of time and resources that dominate most projects, designers often must consider the need for further iterations.

We suggest that such design intuition can only be achieved through design doing, not thinking, and that much of the doing, is in the depth of iterative cycles. Indeed, BYU Professor Chris Mattson, asserts that without iteration, design is superficial and ineffective, and he adds that designers in all fields are essentially involved in cycles of creation, evaluation and iteration (*Iteration*, 2020) Notably, for novice designers, Mattson states that “successful iteration is driven by humility, insight and feedback”.

Whilst opportunities for deep, iterative design cycles may be fleeting for novice designers, we further suggest that novice designers can attune their design intuition by adopting design principles outside their professional settings.

*Design is a way of life, a point of view. It involves the whole complex of visual communications: talent, creative ability, manual skill, and technical knowledge. Aesthetics and economics, technology and psychology are intrinsically related to the process.*

**Paul Rand**

In *Design as a Way of Life* (Wadlow, 1994) Wadlow states that she endorses “a new approach to design altogether, an approach in which our favourite design principles become a way of life rather than just a set of instructions we follow when we're creating an end product” But what does it mean? The idea of design as a way of life might sound abstract, especially for inexperienced designers, but for experienced designers, their design thinking skills become a natural lens through which they experience the world, shaping their approach to everything.

In addition to our collection of prompts, novice designers may enhance their affinity to iterative approaches that are combined with deep design investigations, by:

**Going beyond the first idea:** Learn to challenge the misconception that the first idea is always the best idea. Great designs rarely emerge fully formed at the first try and benefit from rounds of evaluation and iteration.

**Design as an archaeological dig:** Think of your design challenge as an archeological site. Surface observations may reveal fragments of the problem. Designing for depth is akin to a thoughtful excavation – unearthing layers of information (user research, data), and uncovering historical contexts (reviewing previous design solutions), helps piece together a more complete picture.

**The Power of Perseverance:** Frame design as a journey, not a destination. Reaching a desirable solution or preferred future requires a consistent effort in exploration, combined with a willingness to adapt based on research findings.

## END OF ACT II

**ACT III**

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# Habits for designers of futures





# ACT III: HABITS FOR DESIGNERS OF FUTURES

## Scene I: Towards habits for designers of the future

During the process of creating ACT III, we have deliberately paused and embraced one of our own suggestions, namely that we embrace the premise of moving from reflection to reflexive approaches. Subsequently, we begin ACT III, with our own reflections on the previous acts.

In **ACT I** we deliberated over design history, clearly a fascination for both authors of this report, as we view our lack of knowledge of design history as a gap in our education. Additionally, we considered the response from Higher Education providers and proffered that design methods were either assumed or under-represented in graduate design programs, especially those programs that focused on designing futures. Subsequently, we arrived at our own definition of design, and after much thought, a further nuance has emerged that, to us, design will always be fluid and ambiguous as our aspirations for the future mature and evolve over time and in response to previous design interventions.

In **ACT II** we synthesized survey and interview responses to develop six insights. Through multiple post synthesis conversations, we arrive at a further surprising insight, that **design is writing and writing is design**. The writing process, one that requires research of existing literature, the iterative development of a voice and point-of-view, ultimately moving towards insights that, in turn, are linked to building action towards realizing a preferred future, is akin to the design process. Moreover, it is a genuine and less burdensome gateway for novice designers to approach the development of their own practice - through their own writing, recording and continued reflections of their design practice.

Against the backdrop of an increased need to elevate design literacy, we further reflect upon two quotes that have stayed with us - the premise of '*deliberate practice*', whereby if novices are to advance through levels of expertise, then they must stretch both the breadth and depth of their practices; and '*strategically making*', a nuanced response from a survey respondent regarding the essence of what designers do.

Inspired by these quotes, we have utilized our definition of design and our six insights to act as design criteria for a prototype - a prototype that is associated with the development of habits for novice designers that aspire to be designers of the future.

### Building habits towards a future identity

As we consider the potential of creating such a prototype, we revisit Nigel Cross' s often cited book, "Designerly ways of knowing". The 1999 version of the book dedicates an entire chapter to the nature and nurture of design ability. Cross summarizes design abilities into four core areas: resolving ill-defined problems; adopting solution-focused strategies; employing abductive/productive/appositional thinking' and the use of non-verbal communications media e.g., sketching, and graphical representations. Fast-forward twenty years, and in considering a "new curriculum for a new age in design", Weil and Mayfield

(2020) build on Cross's competencies and add three more, with a focus on co-creation and participatory design, that are "needed by tomorrow's designers", they include:

- **Embracing complexity:** the visualization of complex systems, allowing for stakeholders to identify and act on interventions.
- **Cultivating possibilities:** creating and sharing provocations to encourage the emergence of stakeholder perspectives.
- **Driving impactful change:** Complex problems require collective action - designers can motivate stakeholders towards action.

Regardless of a preferred definition of design - our own definition points to the need for designers of the future to transcend conventional disciplinary confines, foster collaboration, and uphold ethical and inclusive design practices - **there are core aspects of a design practice** that need to be cultivated and developed.

Furthermore, there is a consensus that there are distinct differences between the actions and thoughts of novice and expert designers. Cross highlights that experienced designers can draw on a more mature set of previous examples and projects, leading to increased confidence in creating prototypes and experiments to frame design challenges. Conversely the novice designer often struggles with understanding the problem space and may fall into a cycle of exploring partial solutions in depth, and fixating on a particular solution, in contrast to the expert that is willing to start from a 'breadth-first' position. Concalves et al (2011) argue that there are two further areas that hold novice designers back from advancing their design abilities. These include limitations of explorations - novice designers tend to return to a limited and familiar collection of external inspirations and ideation methods; and a low commitment to reflection - even with an expansion of inspirations, a low-level commitment to reflection by novice designers hampers their advancement.

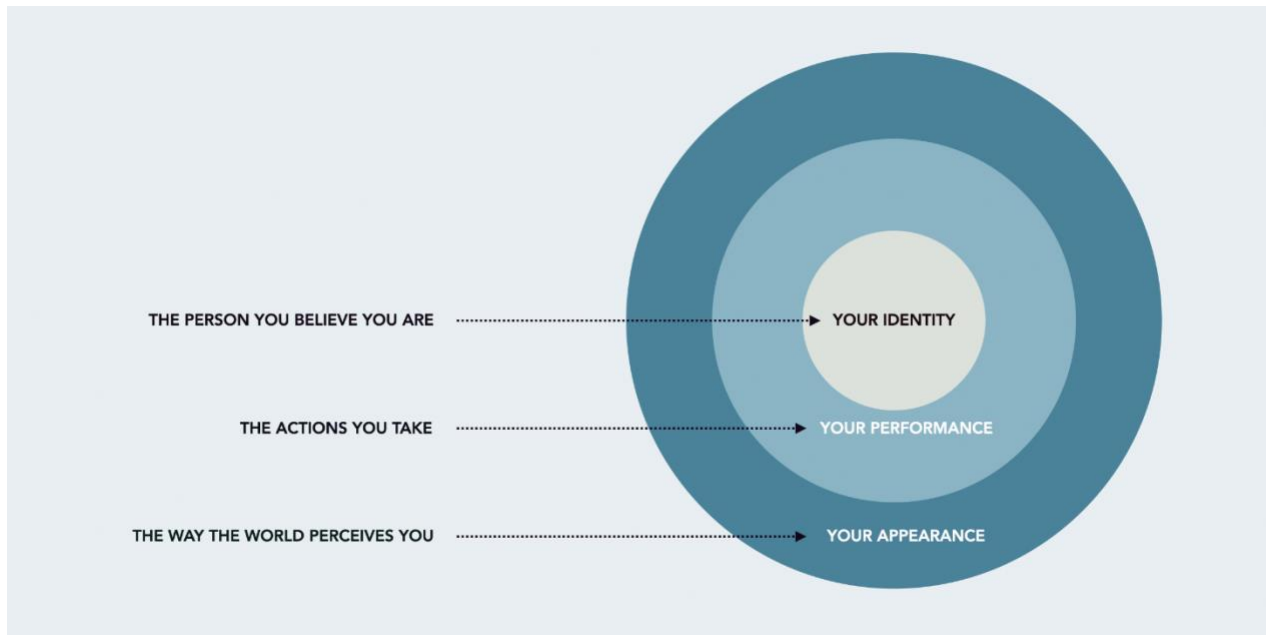
To assist novice designers in becoming designers of the future, we have embraced the notion of habits. The Cambridge dictionary defines a habit as "something that you do often and regularly, sometimes without knowing that you are doing it". The sentiment regarding subconscious acts is borne out in our interviews, with many respondents offering suggestions for novice designers - stretch your interests, adopt the 'eyes of a traveler' and practice reflection through sketching and writing - but also struggling to articulate the habits that have become ingrained in their own work processes, highlighting the intrinsic nature of such habits in their design practice.

But habits are more than efficiencies or short-cuts, they are **pathways to our future selves**. The author James Clear argues that the key to building lasting habits is to first focus on the creation of a new identity. Clear's model suggests the following three layers:

**Layer 1 - Changing your outcomes:** This level is concerned with changing your results e.g., publishing design related posts; researching designers from non-western backgrounds. This level focuses on specific goals.

**Layer 2 - Changing your process:** This level is concerned with changing your habits and systems e.g., developing a reflection practice, broadening your inspirations and motivations. This level is associated with habits.

**Layer 3 - Changing your identity.** This level is concerned with changing your beliefs, assumptions, and biases e.g., becoming a designer of the future.



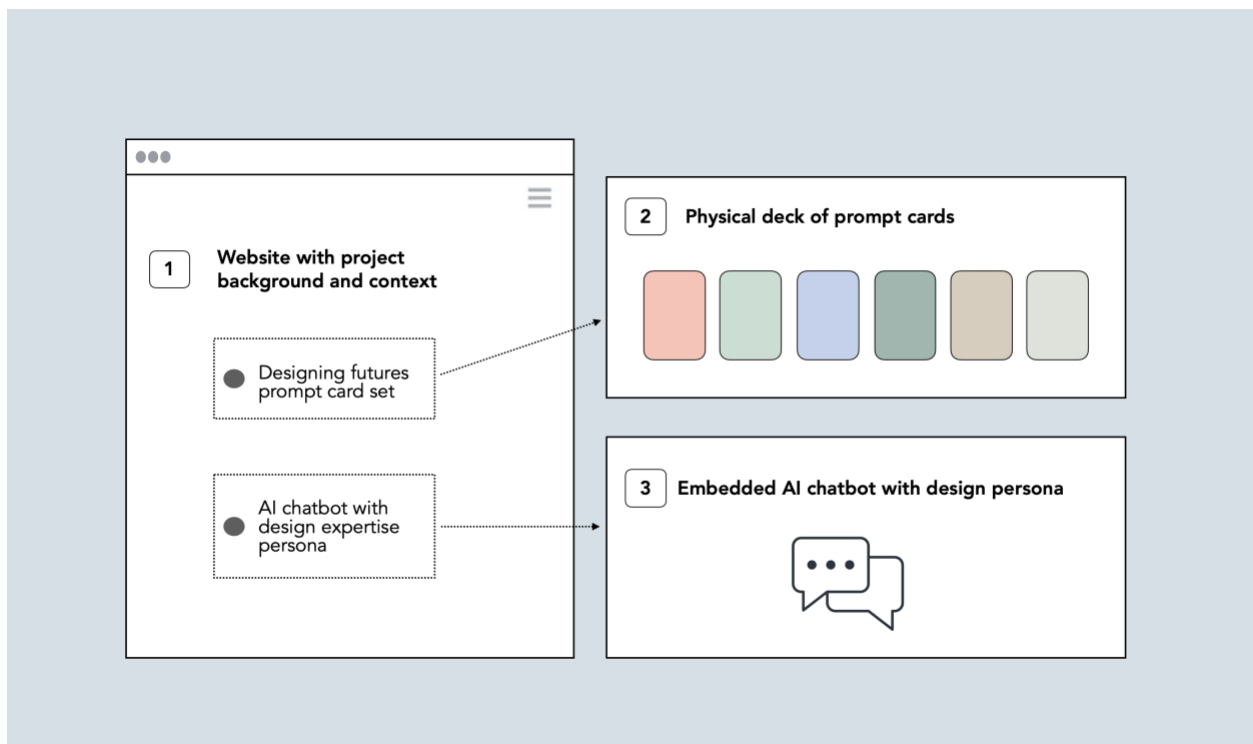
*Figure 6: James Clear's pathways to our future selves*

## Scene II - Building a Prototype

The goal of our prototype is to assist with the creation and maintenance of identity-based habits. Our assumed identity is that of a designer of the future. The prototype consists of three components (Figure 7):

- A website that hosts a brief description of this research project, contextual information regarding our approach to the website and a blog section that will act as an on-going repository for our own design reflections and growth.
- A physical collection of prompt cards that are aligned with our six insight areas. Each card will consist of a question/activity/suggestion that designers can use to expand their expertise (deliberate practice). In the accompanying information that will be supplied with the physical deck, we will encourage designers to capture their process and thoughts, to build towards a collection of their own reflections. Within each insight area, there will be five to six prompt cards, wildcard suggestions and blank cards to allow designers to create and share their own prompts. The cards will be available for digital download for printing and distribution.

- Access to an embedded artificial intelligence chatbot service that can be used to further discuss the prompt cards and areas of design interest. The chatbot service will be a customized version of chatGPT, that will have access to uploaded design related documents and be given the 'persona' of a designer who is experienced in assisting novice designers with improving their design abilities. Due to the monthly subscription cost of the customgpt service, this feature will only be available for a limited period. However, an example of an on-screen interaction with the chatbot service will be recorded and stored within the project website.



*Figure 7: three outputs from our research and insight development*

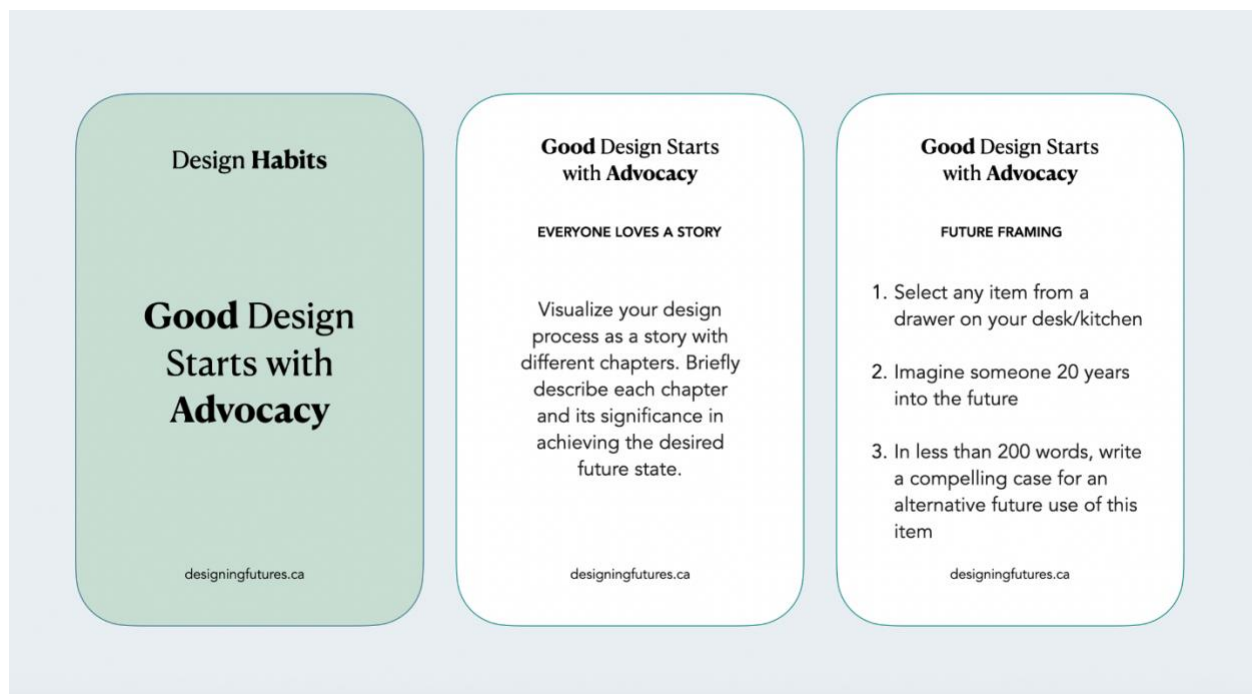
In developing our prototype, we are committed to sharing both the process and the practice. Subsequently, we will briefly share how each component was realized. (Screen captures are available in Appendix C).

The website is intended to act as a starting point for the experience, although all three components - the website, physical cards, and the AI design expert - can be used independently of one another. WordPress was selected as the platform for the website because of its ease of use and focus on blogging. Further, a low-cost WordPress theme was applied to the platform to create a cohesive look and feel for the website and an intuitive and responsive navigation system. The website is available at <https://designingfutures.ca/>

The physical set of design habits cards draw inspiration from The School of Life - an organization that combines learnings from psychology, psychotherapy, philosophy, art, and culture to develop products and services that combine to enable people to live more fulfilling lives (School of Life Website, 2023) - and Intelligent Change - an organization that aspires to enable and simplify behavioral change. The cards are aligned with our six insight areas and are colour-coded to allow users to readily select prompts from a

specific area e.g., good design starts with advocacy. Alternatively, users may select a few cards from each insight area, and then decide to select the one card that best meets their current motivations or combine cards to create a unique prompt.

Figure 8 provides an example of the card colour-coding, a sample prompt, and an opportunity for novice designers to stretch their inspirations by researching designers that may have historically been overlooked and/or those designers that may not typically be highlighted or discussed within traditional, Western focused design programs.



*Figure 8: an example of a grouping of prompt cards*

The cards are purposefully physical in nature to encourage users to take a break from their digital screens. They are similar in size to a deck of playing cards and can be used in a variety of situations - workplace, commuting, travelling etc.

The cards are intended to be prompts that encourage deliberate practice. While a user may simply complete the activity on a piece of paper, we encourage users to capture their experiences with the cards, over time, either in a physical notebook or a digital note-taking service or blog site. This further step, a commitment to capturing the response to the card prompts, promotes deeper reflection and an opportunity for users to review their responses over time. We have also included blank cards to encourage users to ask colleagues to share prompts and to inspire research into newly discovered designers. It is our hope that the cards are an entry-point to developing a regular commitment to enhancing user's design practice. (Appendix D provides a printable set of prompt cards.)

For users who may wish to engage in a conversation regarding the prompts or are seeking guidance, we have developed a customized chatbot service, entitled **Design Mentor**. Given the pace of change within

generative Artificial Intelligence, and only emerging research on the benefits of interacting with a virtual mentor, we were initially hesitant to offer an AI-focused component. However, we have been inspired by the findings from Dell'Acqua et al's "Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality" (2023). The authors conducted a study of over 750 consultants and concluded that AI interaction is a skill-leveler, i.e., those consultants that scored on the lower end of testing without AI, saw the largest increase in their grading. Conversely, those consultants that scored highly without AI, only saw marginal increases with AI as a collaborator. We wonder if the inexperienced business consultant is similar to the knowledge and expertise level of the novice designer?

Further, one of the co-authors of this study, Professor. Ethan Mollick provides a rich summary of two archetypes that have emerged from this research paper - centaurs and cyborgs. Mollick describes centaurs, much like the mythical creature, as possessing a clear delineation between the person and the machine. With a centaur-like approach, a designer would retain the tasks that they are strongest at and then allocate specific tasks to AI. For example, a designer of the future may develop scenarios from trends that have been analyzed by an AI system. Alternatively, the cyborg-like approach attempts to integrate human and machine, whereby tasks are not delegated, instead they are worked upon in tandem. In this scenario, we imagine a novice designer interacting with a coach-like design mentor throughout their design activities.

However, before we rush to adopt a centaur or cyborg approach, it is worth considering the findings from a 2023 study on human and AI collaborations. Within this setting, two groups were tasked with creating solutions for a business unit, with one group using existing tools and the other using chatGPT as a collaborator. Perhaps surprisingly, the AI-infused group scored fewer failing grades than the control group, but they also created less highly rated grades, leading the researchers to state that "generative AI helped workers avoid awful ideas, but it also led to more average ideas" (Gohar and Utley, 2023).

Utley provides an underlying reason for this surprising lack of superior performance from the AI- infused group, he states that we are usually content to accept the first answer from the large language model, defaulting to what he describes as our human foible of "craving cognitive closure". This is particularly relevant to novice designers, who may be hesitant to pivot course or reframe their project, at the expense of starting another cycle of iterations.

In using our own design mentor, we have embraced Utley's recommendations to overcome the urge to accept a "one and done" approach. His recommendations include **critique the ai answer** - rather than blindly click regenerate, respond with a rationale for why you find the response lacking and where the AI should focus on the next response; and **ask AI to prompt you** to better hone your request.

Against this backdrop, and in the spirit of prototyping, we have invested in a subscription service that allows for the configuration of a chatbot-like service. Design Mentor has been configured in customgpt.ai with the following specifications:

## Access to Data and Large Language Models

From our literature review, we have uploaded publicly available articles to a data collection option within the service. This provides context for the design mentor service, as the uploaded documents are indexed and referenced in chat responses. In addition, the chatbot also has access to OpenAI's chatGPT 4 Turbo (released November 2023). Subsequently, in theory, the chatbot service will parse the uploaded files, prior to using GPT4 to deliver responses. Moving forward, there is great potential, with the requisite approvals and anonymization of responses, to use interview transcripts from designers as a further source of nuanced information for an AI mentor service. We ponder if historical interviews and documentary transcripts could provide even deeper and insightful guidance to novice designers.

## Custom Persona

To provide a meaningful and effective service to novice designers, we have configured a custom persona for the AI chatbot to 'embody'. The persona is created with the following criteria: chatbot description; role and goals; constraints; guidelines; personality traits and special instructions, which include a summary of our six insight areas. Indeed, when we enter the prompt, "What is your purpose?", the Design Mentor responds with the following:

*“ My purpose is to mentor novice designers, helping them to improve their design skills. I aim to encourage critical thinking and problem-solving through insightful questioning, and to provide examples from a wide range of historical and modern designers to illustrate design principles and inspire creativity. I encourage novice designers to explore all types of design, from industrial and graphic design to systems design, and to think of themselves as designers of the future. My goal is to facilitate their growth by offering clear, actionable advice while encouraging them to develop their unique style and approach to design challenge ”*

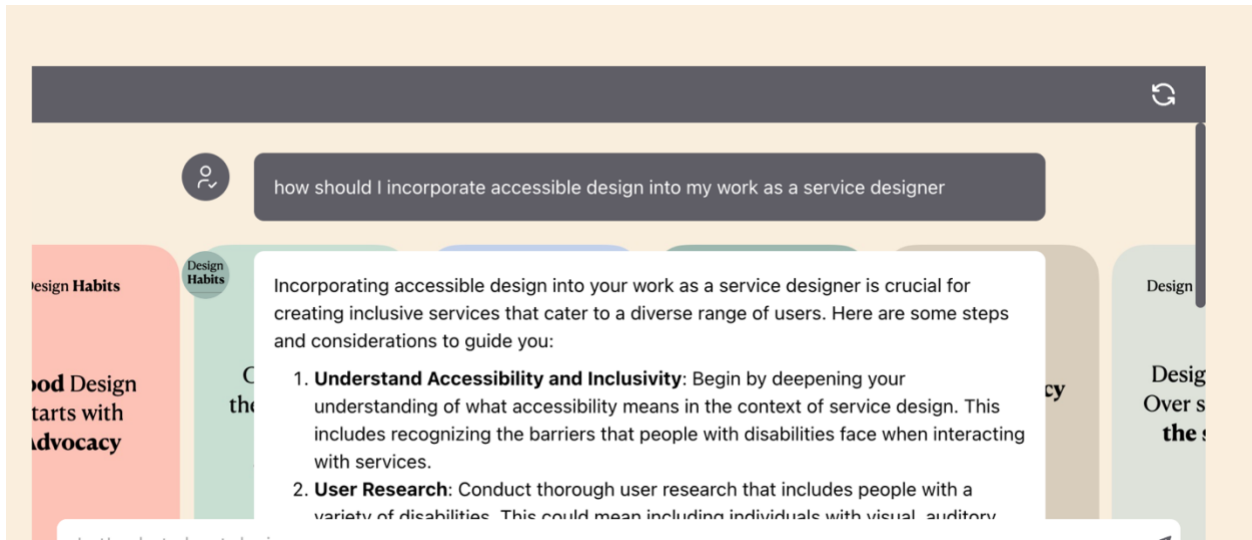


Figure 9: An example of a response generated by our Design Mentor



## RECOMMENDATIONS & NEXT STEPS

In attempting to provide a practical application to assist novice designers, we have landed on one prototype that strives to build design habits - a combination of prompt cards, an encouragement to commit to practices of reflection, and the potential of guidance from an AI chatbot service. Clearly, this is just one potential pathway. We are hopeful that our collection of six insights and niche discovery traits can be used as design criteria to encourage novice designers to create their own deliberate practice of design skills and reflection.

Throughout this project, we have purposefully integrated periods of reflection within our research and synthesis processes. We have developed an appreciation for exploring concepts and curiosities in depth, and the need for iterative design cycles. Subsequently, we have already shared version one of our prototypes with our fellow graduate students to get a sense of where the offering resonates with similar, novice designers, and where the offering might be iterated upon to improve the learning experience. We are encouraged to both continue development of alternative prototypes and publish our reflections.

We also imagine that in the coming months, there will be further research concerning the effectiveness of AI for educational practices and creative endeavors. Will a future AI mentoring system simply mimic past designers and projects, which may only raise expertise levels to a general median, or will it adapt and morph into a sophisticated coach that can push designers beyond their natural capabilities? Indeed, some may argue that deeper learning only happens by struggling with difficult concepts and materials. Subsequently, should aspiring designers of the future limit interactions with AI systems? Will AI system's ability to effortlessly provide convincing answers to novice designers prove too tempting to resist and ultimately, reduce their desire to grapple with inter-connected, complex problems? We anticipate that future cohorts of Design graduate programs will grapple with these various questions and investigate the balancing act of experiential learning and AI augmentation. We look forward to their shared learnings.

Subsequently, we offer the following recommendations:

### For Novice Designers

- Whether it be trying the prompt cards or exploring a design concept out of your own curiosity, **revel in the struggle**, and take the time to read and digest research before making assumptions. The wonderfully titled paper "Even Einstein struggled: effects of learning about great scientists struggles on high school students' motivation to learn science" (Lin-Seigler et al, 2016), indicates that students were motivated to learn when they heard that leading practitioners experienced similar challenges. The motivational aspect of struggle is reminiscent of our own provocation that **design is writing and writing is design** - we can attest that design is in the doing and there is much to be derived from learning to enjoy the challenge of ambiguity.
- Our prototype is just that, a prototype. Something to learn from. However, we assert that the most valuable component of our solution is the **practice of reflection**. Capturing your thoughts, first attempts and evolving methods may at first seem laborious and potentially even cause mild ripples of

embarrassment, but as we review our growth, we begin to realize the value of maintaining and developing the story of our work.

### For Higher Education

- Strategic foresight and futures thinking attract those students in search of something different than an MBA. Many graduate students enter such programs with a wide range of design skills and experiences. We believe the value of graduate programs is beyond analysis and research, and that the **focus of such programs should turn towards action and enabling behavioural change**. We hope that we have convinced readers of this report of the value and necessity of design to realize preferred futures and we are hopeful that higher education providers will re-balance their programs towards design practices.

Change within higher education programs is often prone to long-lead times and the cadence of quality assurance programs and accreditation requirements. To overcome these time restrictions, we suggest the introduction of week-long immersives in design and a refocusing of electives on design literacy and methods.

- **Design needs to be on display** - The shortcuts of experts, the magical synthesis of insights and the polished presentations of successful transformation are inspiring, but also intimidating. The messiness of designing for futures, the re-starts, the pivots, and the rabbit-holes needs to be shared and celebrated with students. Faculty and practitioners need to share their own stories of growth, to demystify design.
- **Defining design is an invaluable personal journey** - it is a challenge in research, framing, observation, and thoughtful iterations. We humbly recommend that 'defining design' be an initial challenge or project for graduate Designing Futures programs.

### Next Steps

Given our professional lives, our next steps involve further practical exploration in our respective fields.

In a **high school setting**, the prompt cards will be used to develop a **micro-credential in Futures Thinking**. Through a series of clubs, workshops and learning experiences, a combination of the cards and the generative AI mentor will be used to introduce high school students to the concept of developing their own design practice. We are hopeful that the cards will either morph into a more nuanced set of prompts or be replaced with student-designed alternatives. Further, student feedback will be sought on how to encourage and sustain a **deliberate practice of reflection**.

In **Service Design** there is an opportunity to utilize the outputs - combining prompt cards with the AI mentor which could elevate each stage of the service design process: In the **Ideation & Exploration phase** use of the prompt cards and the AI mentor could be used to stimulate creativity and explore various paths for a service design project. By incorporating prompt cards into **user research activities** and utilizing the AI mentor relevant research resources could be gathered. By employing the prompt cards

during **user testing** sessions and subsequently relying on the AI mentor to analyze the user feedback for targeted enhancements. And by using the cards for **Communication** and gaining inspiration from the prompt cards a Service Designer could craft visually appealing project materials and then collaborate with the AI mentor to produce informative website content relevant to service design and the design world at large.

## CONCLUSION

The underlying goal of this paper has been to assist novice designers in grappling with the nuances, complexities, and inherently ambiguous nature of design. Our driving research question has sought to enable inexperienced designers with the confidence and agency to become designers of futures. Moreover, we have substantiated that all design is inherently anticipatory and intrinsically linked to the realizing of preferred future states.

In searching for our own definition of design, we have uncovered that such explorations assist in enhancing the design literacy of novice designers. By doing so, they will be exposed to design history, design researchers, design criticism and emerging design disciplines and perspectives. We have discovered that designers do not need to be conveniently categorized into a maker or strategic designer. Instead, even with future concerns about the professional future of designers, practitioners assert the need to be fluid in title and role and to cultivate a willingness to morph into collaborative shapeshifters.

Furthermore, we have identified that to deliver graduate programs in designing futures, higher education providers have calibrated academic programs towards strategy, foresight, and trend analysis. We call for a rebalancing of such programs towards design literacy and methods.

The limitations of our research include the relatively small number of survey responses (40) and interviews with a collection of novices and experienced designers (18). Clearly, further research would benefit from both a larger group of respondents and increased diversity in the type of interview subjects, given that many of our participants are from North America.

However, despite these limitations of scope, we believe that our synthesis of interviews and survey responses provides six invaluable insights that facilitate growth for novice designers: good design starts with advocacy; design literacy matters; go beyond the algorithm and nurture curiosity; design for depth over scratching the surface; design is an anticipatory state of being; and, on the road to mastery, learn from travelers.

Whether it be through initiatives like the design habits prototype, or through their own individual frameworks, we believe that novice designers, through a deliberate practice of activities and reflections aligned with these six insights, can create a habit of practice towards a new identity - a designer of futures.

Lastly, we return to our initial provocation - if design is everything, is it anything, and we posit that, with a commitment to design practices and methods, design can be a foundational component to achieve anything, whether that is truly everything, lies with the individual.

**END**

## GLOSSARY:

Term	Description
<b>design</b>	Refers to more traditional and specific acts of design such as the creation of graphics, products, and interfaces. The focus is usually on the aesthetics and functionality of an item or object.
<b>Design</b>	Refers to broader more holistic approach to design that encompasses the creation of items beyond the aesthetic and considers systems, processes, and strategies
<b>Design for Change</b>	Using design as a tool to create positive social and environmental impact.
<b>Design for Sustainability</b>	Designing products, services, and systems that minimize environmental impact and promote social responsibility.
<b>Design Habit</b>	Regular practices and routines that contribute to effective and efficient design work.
<b>Design Literacy</b>	Possessing a broad understanding of design history, theory, and methodologies.
<b>Design Mentorship</b>	Providing guidance and support to novice designers by experienced professionals.
<b>Design Methods</b>	Tools, frameworks, and processes used to solve design problems.
<b>Design Prototype</b>	A tangible or virtual model used to explore and test design concepts for a desired future.
<b>Design Research</b>	Gathering information about users, problems, and needs to inform design decisions.
<b>Design research</b>	A research practice that “studies how people encounter, use, and experience communication, products, spaces, and services
<b>Design Thinking</b>	A human-centered approach to problem-solving that emphasizes empathy, creativity, and iteration.
<b>Designer Identity</b>	Developing a personal philosophy and approach to design.
<b>Emerging Technologies</b>	New and rapidly evolving technologies like artificial intelligence, virtual reality, and the internet of things (IoT).
<b>Experience Design</b>	A collaborative practice that “addresses the entire user journey in acquiring and using information, products, and/or services
<b>Futures Studies</b>	A field of study focused on understanding and shaping potential future scenarios.
<b>Generative Artificial Intelligence (AI)</b>	A type of AI that can create new content, such as images, text, or music
<b>Iteration</b>	The cyclical process of designing, testing, refining, and re-designing based on user feedback.
<b>Literature Review</b>	A critical analysis of existing research on a particular topic
<b>Maker Designer</b>	A designer who focuses on creating physical products

<b>Maker vs. Strategic Designer</b>	A distinction between designers who create physical products and those who design complex systems or experiences
<b>Multidisciplinary Collaboration</b>	Working with professionals from diverse backgrounds to address complex design challenges.
<b>Novice Designer</b>	A person new to the field of design, lacking extensive experience but possessing design thinking skills and the desire to learn.
<b>Participatory Design</b>	A widely used human-centered design (HCD) approach that advocates for "active user and stakeholder engagement throughout all phases of the research and design process
<b>Preferred Futures</b>	Desired or ideal future states that design can work towards achieving.
<b>Prototype</b>	A tool that helps turn something theoretical into a real, working product or system that can be evaluated and refined
<b>Prototyping</b>	Creating low-fidelity or high-fidelity models to test and refine design concepts.
<b>Semi-Structured Interview</b>	An interview with a planned list of topics but allowing for flexibility and follow-up questions
<b>Service Blueprint</b>	A way to show "systems and processes that must be in place to deliver a desired service experience
<b>Service Design</b>	The practice of designing services, using "a holistic and highly collaborative approach to generate value for both the service user and the service provider
<b>Speculative Design</b>	A design methodology that combines forecasting techniques and strategic design principles, and applies them to scenario development within the context of uncertainty
<b>Strategic Designer</b>	A designer who focuses on designing complex systems or experiences
<b>Survey</b>	A research method that involves collecting data from a group of people using questionnaires
<b>Touchpoint</b>	A place or moment in which a user encounters a service
<b>Transdisciplinary design</b>	A holistic design approach that aims to integrate "the theoretical focus of the social sciences [with] the transformative possibilities of artistic and design practices
<b>User-Centered Design (UCD)</b>	A design philosophy that prioritizes understanding user needs, behaviors, and motivations to create effective and desirable solutions.

# APPENDIX

## Appendix A

### Review of Graduate Programs in Designing Futures

We begin our investigation of Graduate Design programs at the Royal College of Art (RCA) in London, UK. RCA's Design Futures program is a year-long program that has been devised to "enable you to work across all disciplines and beyond, to build future-shaping knowledge and skills, address the challenges we face, envision and navigate towards a preferred future through design-led interventions". The program description aptly aligns with our own assertions regarding the future focus of design. In considering the program's one hundred and eighty credits of study, thirty credits are allocated to design electives, with the focal areas being envisioning futures, entrepreneurship, complex systems, and research methods.

Staying within the UK context, we consider University of the Arts London (UAL) and the Glasgow School of Art (GSA). UAL's Master of Design for Social Innovation and Sustainable Futures, focuses their year-long program on co-design for sustainable futures, research methods and a Design in Action major project. GSA's Master of Design in Design Innovation programs similarly consist of research methods, a master's research project, and two studio opportunities. Within GSA's Master of Design offerings there is a one that is focused on transformation design, described as "(a program that) focuses on change-oriented approaches to design, which engage with complex social or systemic issues".

Moving across Europe, we arrive in the Netherlands and consider Delft University of Technology's Master of Science in Strategic Product Design, an offering that strives to merge design and innovation strategy to "shape a just and sustainable future". Delft differentiates the standard mix of research methods, forecasting and backcasting and a graduation project with a core design offering that equips students with "theoretical foundations and practical insights that foster critical thinking".

In Barcelona, the Institute for Advanced Architecture of Catalonia (IAAC) promotes a Master of Design in Emergent Futures, and proclaims a similar narrative to comparable design schools, namely, that we are indeed experiencing a paradigm shift in design and that "we are living in a moment of rapid transition. From this moment on, we will need to design for a different world to that we have known". The Emergent Futures program uses practical design processes to investigate complex systemic issues, and the two-year offering provides an extensive academic research phase that is supported by design studios and seminars. Indeed, of our review of European Design Schools, IAAC's Emergent Futures stands alone as a Graduate program that provides a substantial grounding in design practices and experiences.

We begin our consideration of North American Design Schools, with Toronto's OCAD University Master of Design in Strategic Foresight and Innovation. As prospective graduates of the OCAD program we are familiar with the two-year experience and the focus on foresight, understanding systems, business design and research methods.

Crossing the border, we note that Rhode Island School of Design (RISD) has moved into what may be termed the 'design complexity space' by offering Design Engineering in combination with Brown Engineering. While the eleven-month intensive RISD + Brown offering hopes to "envision alternative frameworks for addressing public health, education, climate change and more", there is no explicit statement regarding designing futures.

Similarly, in New York, Parsons offers two distinct master's programs - a Master of Science in Strategic Design & Management and a Master of Fine Arts in Transdisciplinary Design. The MS option focuses more on sustainable business models and design strategy, whilst the MFA offers deeper dives into design-led research, design history and studio experiences. Ideally, elements of both Parsons offerings could be combined into a custom, student-centric approach to designing futures, but that level of customization has yet to become broadly available in Graduate Schools and that demand is typically met by Professional Development/Executive Education offerings.

Rather than crafting bespoke graduate offerings that meet the requirements for 'designing futures', MIT has opted for a different approach, one where all students are exposed to design methods. Launched in September 2022, the Morningside Academy for Design, serves as a hub to encourage growth in design across the University, with the lofty aim of strengthening "MIT's ongoing efforts to tackle pressing issues of global importance such as climate adaptation, public health, transportation and civic engagement". Clearly, it should be noted that this scale of undertaking is supported by a \$100M founding gift.

Returning to graduate program options, we consider two further options. Chicago's Institute of Design (ID) at Illinois Tech, offers a two-year Master of Design Methods (MDM) program. The program is designed for experienced professionals who wish to explore three core areas: design-led innovation; strategic thinking methods; and leadership and activation. Whilst this program would present a significant barrier to non-designers, we admire the commitment to design methods. Graduate programs would benefit from the inclusion of practical design experiences that borrow from the MDM model, namely, analysis and synthesis in design, modes of human experience and evidence-based design.

Lastly, we consider the University of Houston's Master of Science in Foresight. The graduate level program can be completed in one year (full time) or over two years (part time), with core offerings including: futures research; systems thinking; social change; and most notably, design futures. The curriculum document for design futures states that the intent is to 'bring together the power to imagine alternative futures and the implications of those futures, and the power to materialize those futures and influence real-world interventions.'



## Appendix B

### Summary of Niche Discovery entrants

**IdeoU** - Ideo is a design and innovation firm, with a global reputation. IdeoU is their online school that is designed to equip leaders with experiences in innovation and design thinking. Pricing for the self-paced and cohort-based offerings (all online) are significantly less than traditional academic programs. Recently, the platform has pivoted to focus on 'creative thinking for complex problem solving', which includes a new focus on systems thinking. Month-long, online cohort experiences are priced at approximately \$795.

**Institute for the Future (IFTF)**- although the IFTF was founded in 1968, it continues to focus on the niche offerings of foresight and strategic learning experiences. IFTF offers learning experiences for individuals and teams. Clients may elect to achieve IFTF certification and skills in foresight, futures thinking and scenario planning. The blended experience - online and in-person can be completed within six weeks, albeit at a cost of approximately \$6000.

**The Futur** - is an online learning platform with the mission of teaching one billion people to make a living doing what they love. Founded by Chris Do, and consisting of an online catalogue of practical, relatively low-cost tools and resources for creatives, the Futur strives to "revolutionize business and design education". Pricing ranges from under \$100 to \$1500 for single resources and bundles, all of which offer just-in-time and personalized learning journeys from current industry practitioners.

**Maven** – is both a learning platform that offers live, cohort-based learning experiences for students and a cohort business platform for instructors to create and market expert-led, peer-driven learning. Maven's design offerings include a range of options from honing specific skills in Figma to design leadership journeys. Maven espouses the value of cohort learning that is live and professionally relevant.

**Dyson Institute** - While companies typically seek to hire graduates after they have completed their university programs, the engineering company, Dyson, created their own university, with degree awarding powers. In addition to design and engineering theory and knowledge, Dyson graduates are exposed to leadership development (typically achieved in a master's or MBA program) and professional workplace experience.

**ADPList** - is a mentoring platform that connects mentees with design and technology professionals, providing opportunities for one-to-ones for feedback on specific design projects and career progression. ADPList goal is to 'inspire powerful conversations and collaborations among members worldwide, so together we can change the world with creativity". In addition to the premise of giving back, mentors (and their companies) receive reputational boosts and increased networking opportunities.

**Synthetic Users** - is a web-based service that promotes the ability to conduct user research without the headaches of user recruitment, scheduling, interviews, and synthesis. Essentially, ideas and products can be tested with a group of AI created participants. Subscribers to the service can define a problem prompt, describe a potential set of users, and then review the insights from the AI constructed interviews. Such tools provide the opportunity to compare synthetic responses to organic responses.

**Board of Innovation** - The autonomous innovation engine service consists of a collection of AI agents, each with a distinct purpose, that combine to deliver multiple innovation cycles. The insights, concept, simulation, scaling and building engines directly align with what might be previously considered as high-level creative practices long thought to the domain of human beings. In combination with Synthetic Users, Board of Innovation offers the potentially alluring (for businesses) and anxiety-inducing (for designers) future where “your proprietary engine generates exponentially more concepts, autonomously tests them with (synthetic) consumers, and gets you more and better products to launch”.

**Experience Institute** - aims to bridge the gap between education and the workforce. Not surprisingly, Experience Institute (EI) focuses on the transformative power of experiential learning - offering experiences in Learning self; innovation; management; and storytelling. The positioning of EI aligns with the learning needs of novice designers as they assert that the “deepest learning comes from having the opportunity to not just understand something intellectually and abstractly, but to have opportunities to tinker with it until it bends or breaks. Then to reflect, so we can take what we learn and make it transferable”.

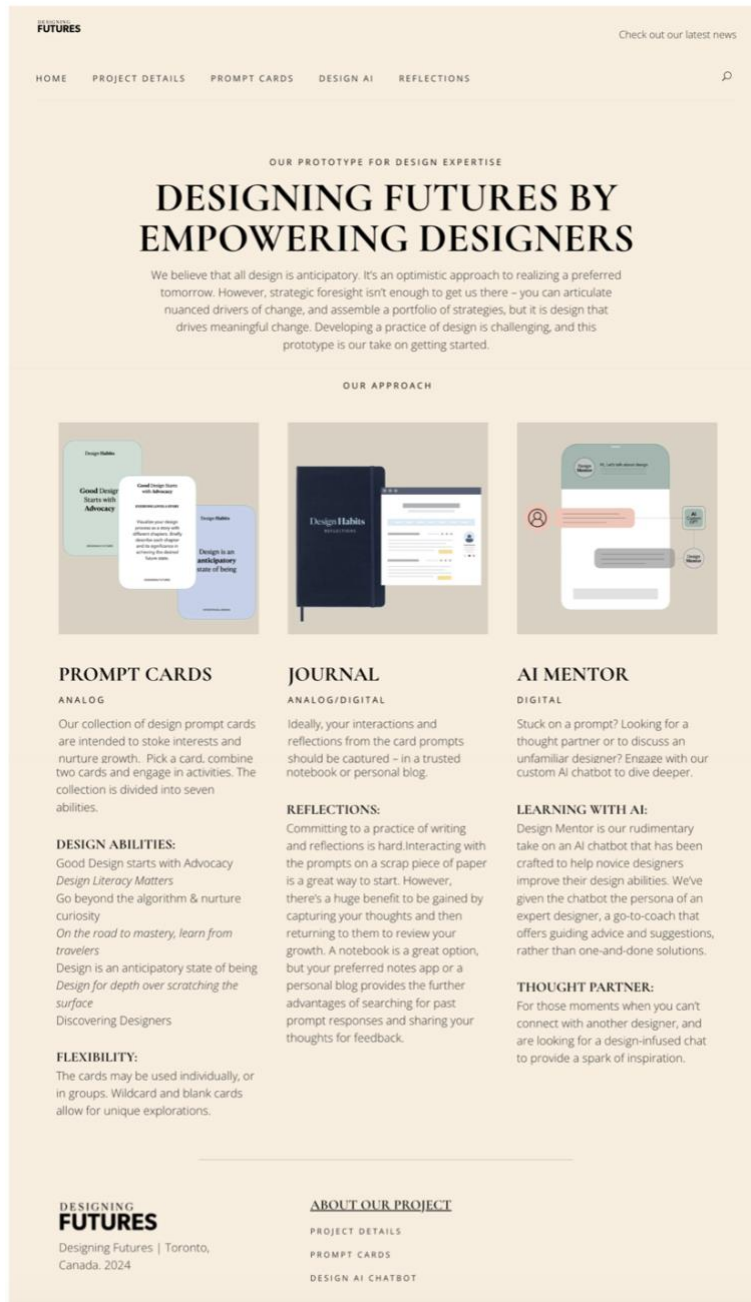


Figure 10: Niche Discovery

## Appendix C

### Designing Futures Website

The Designing Futures website (<https://designingfutures.ca>) consists of three components: a website to provide context and to act as a repository for reflections; the prompt cards (Design Habits); and access to the AI mentor, Design Mentor.





**DESIGNING FUTURES**  
This is a prototype. A combination of a physical set of prompt cards, interactions with a design-focused AI chatbot and an encouragement to capture and share your design journey.

**CATEGORIES**  
Prototype

**LATEST POSTS**

-  **ABOUT US**  
03 APRIL, 2024
-  **DESIGN AI**  
29 MARCH, 2024
-  **PROJECT DETAILS**  
07 MARCH, 2024
-  **PROMPT CARDS**  
29 MARCH, 2024

**ARCHIVES**  
April 2024  
March 2024

## PROMPT CARDS

POSTED AT 08:26H IN PROTOTYPE BY ADMIN • 0 COMMENTS • 0 LIKES

Our prompt cards are intended to motivate novice designers – and we include ourselves in this definition of design expertise – to develop and maintain their own **design habits** of practice. In doing so, we borrow inspiration from two sources.

**Deliberate Practice** – which involves not only improving the skills that you already possess, but extending both the reach and range of your skills. (The Making of an Expert, Ericsson et al, 2006).

**Forging a new identity through habits** – we are taken with the premise that habits are more than efficiencies or short-cuts, rather, they are pathways to a future identity. (Atomic Habits: an easy & proven way to build good habits & break bad ones, Clear, 2018).

Our hope is that our prototype assists novice designers in moving towards their new identity, as a designer of futures.

### FROM INSIGHTS TO PROMPTS

Our **prompt cards** are questions, suggestions and activities that are intended to encourage deliberate practice and reflection. The cards are aligned with the following insights:

#### Good Design Starts with Advocacy

Designers need to advocate to enhance the perceived value of their own work and to substantiate the depth and iterative nature of their intended approach. Before design work can begin, designing the design work must take precedence. Ultimately, designers need to tell a better story about themselves, going beyond intended project outputs to sharing their process.

#### Design is an anticipatory state of being

Whether it's an industrial designer exploring a new material or a strategic designer grappling with complex systems, design is explicitly associated with future states, near and far. Anticipation is a positive re-frame of the angst and uncertainty that bedevils novice designers. Anticipatory states heighten our awareness of current environments, helping to build towards alternative futures.

#### On the road to mastery, learn from travelers

Inexperienced designers can learn effectively from peers and intermediate designers. Experts take short-cuts, break the rules and may confuse novice designers. For novice designers to learn from peers, the design process needs to be reflexive and accessible. Novice designers may benefit from borrowing techniques from other professions that have codified progression.

#### Go beyond the algorithm and nurture curiosity

Designers need to embrace intentionality in their own practice, actively seeking out non-traditional views and perspectives. Intentional habits of curiosity, inspiration and reflection need to extend beyond social media algorithms. Going forward, designers must balance craft and experiences with AI convenience.

#### Design Literacy matters

Design history provides context to where design has come from and what it may transform into. Knowing what has come before, even with unintended bias and consequences, builds nuanced perspectives. Designers need to seek out critique and challenges to their thinking and ways of working and cultivate their design literacy.

#### Design for depth over scratching the surface

Design is an attitude – both a thing to do and a way to be. Designers need to embrace depth and iteration in their approach to projects and their own growth. Designers need to learn to balance the spiral of research with a measured ability to weigh and consider competing options. Avoiding one-and-done, helps build design expertise and the tenacity to take on complex challenges.

## DESIGNING FUTURES

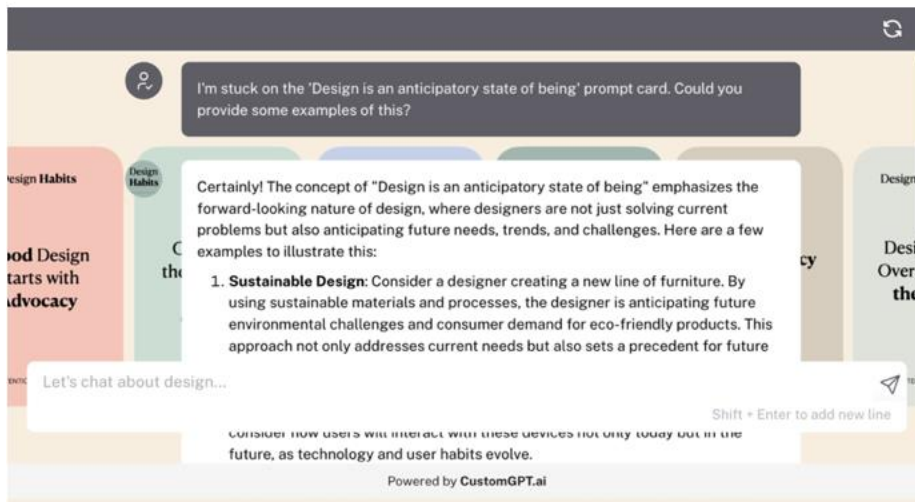
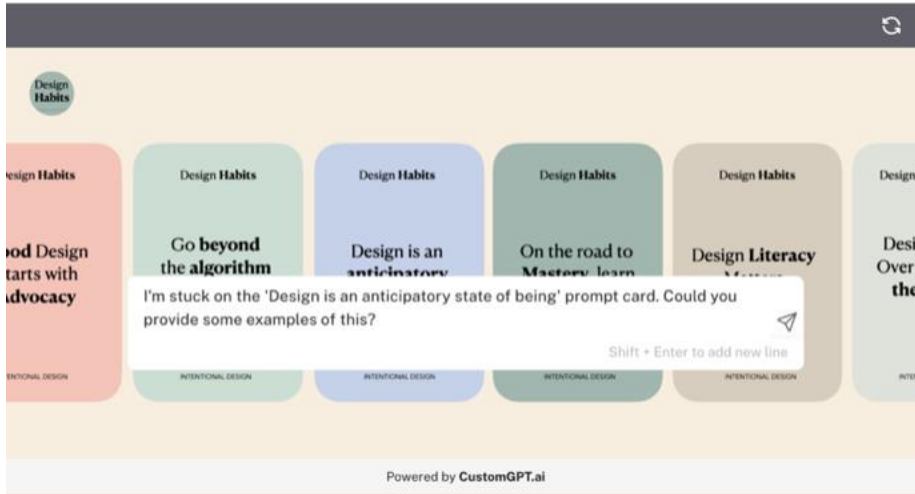
Designing Futures | Toronto, Canada, 2024

### ABOUT OUR PROJECT

[PROJECT DETAILS](#)

[PROMPT CARDS](#)

[DESIGN AI CHATBOT](#)



# Appendix D

## Prompt Cards

<p>Design Habits</p> <p><b>Good design starts with advocacy</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p><b>Good design starts with advocacy</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p><b>Good design starts with advocacy</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p><b>Good design starts with advocacy</b></p> <p>designingfutures.ca</p>
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<p><b>Good design starts with advocacy</b></p> <p><b>Mock Client Meeting</b></p> <p>Role-play a client meeting with another designer. Present your design ideas, address concerns and explain your decisions.</p> <p>designingfutures.ca</p>	<p><b>Good design starts with advocacy</b></p> <p><b>Futures Persuasion</b></p> <p>Craft a narrative that describes the positive impact your design will have on users in the future that you're aiming to create.</p> <p>designingfutures.ca</p>	<p><b>Good design starts with advocacy</b></p> <p><b>Five Whys</b></p> <p>Dig deeper with "5 whys". Justify/explain your design approach with metaphors and examples. Ask yourself 'why?' after each explanation.</p> <p>designingfutures.ca</p>	<p><b>Good design starts with advocacy</b></p> <p><b>Design Odyssey</b></p> <p>Craft a narrative for your design journey. Frame your design process as a compelling story with a clear beginning, middle and end. Think of each step as a chapter towards a future state.</p> <p>designingfutures.ca</p>
<p><b>Good design starts with advocacy</b></p> <p><b>Design Dialogue</b></p> <p>Share your work and spark a conversation. Organize a showcase where you and fellow designers present your projects to a wider audience e.g. colleagues from another department.</p> <p>designingfutures.ca</p>	<p><b>Good design starts with advocacy</b></p> <p><b>Identify the Roadblocks</b></p> <p>Research a real-world project where design could have played a more significant role. Identify the roadblocks that prevented earlier design involvement and brainstorm an alternative approach.</p> <p>designingfutures.ca</p>	<p><b>Good design starts with advocacy</b></p> <p><b>Six Slide Sell</b></p> <p>Craft a persuasive pitch in just 6 slides! Present your approach, address potential concerns from clients, and focus on showcasing the value that you bring to the project.</p> <p>designingfutures.ca</p>	<p><b>Good design starts with advocacy</b></p> <p>Designers need to advocate for the depth and iterative nature of their approach. They need to effectively communicate the value of design and the designer. Designers need to tell better stories about themselves and their methods.</p> <p>designingfutures.ca</p>

<p>Design Habits</p> <p>Design is an <b>anticipatory</b> state of being</p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p>Design is an <b>anticipatory</b> state of being</p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p>Design is an <b>anticipatory</b> state of being</p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p>Design is an <b>anticipatory</b> state of being</p> <p>designingfutures.ca</p>
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<p>Design is an <b>anticipatory</b> state of being</p> <p><b>Futures Forecast</b></p> <p>Step into tomorrow and become a teacher, climate advocate or CEO of an energy company. Imagine a day in this life, 10, 20 and 30 years into the future.</p> <p>▣</p> <p>designingfutures.ca</p>	<p>Design is an <b>anticipatory</b> state of being</p> <p><b>Observation Outlier</b></p> <p>If you're in an office, classroom or cafe, stop and do some people watching. Are people following the design cues within a space or is someone carving their own path?</p> <p>designingfutures.ca</p>	<p>Design is an <b>anticipatory</b> state of being</p> <p><b>The Next Big Thing</b></p> <p>Pick today's 'must have' device or service. Will it still exist in 10 years? Will the product/service stay the same, morph into something else or will it be replaced. Sketch your thoughts.</p> <p>designingfutures.ca</p>	<p>Design is an <b>anticipatory</b> state of being</p> <p><b>What if World ?</b></p> <p>Explore a design problem through the lens of 'What if...' Consider an unexpected policy or rule change (retirement starts at 30!) and design for this future.</p> <p>designingfutures.ca</p>
<p>Design is an <b>anticipatory</b> state of being</p> <p><b>Quiet Contemplation</b></p> <p>Reflect silently on a problem. Using only sketches, try and articulate the design challenge. Share your visuals with a partner for feedback. Ponder on what they saw differently.</p> <p>designingfutures.ca</p>	<p>Design is an <b>anticipatory</b> state of being</p> <p><b>Tomorrow's Delight</b></p> <p>You've been given an unexpected day off. 24 hours just for you. Write down the itinerary of your day. Where would you go? What would you make? Who would you visit?</p> <p>designingfutures.ca</p>	<p>Design is an <b>anticipatory</b> state of being</p> <p><b>Local Hero</b></p> <p>Choose a design challenge in your neighbourhood - traffic, housing, public space. What would you add or remove from your local environment? How would you convince a neighbour to support your idea?</p> <p>designingfutures.ca</p>	<p>Design is an <b>anticipatory</b> state of being</p> <p>Whether it's an industrial designer exploring a new material to a strategic designer grappling with complex systems, design is implicitly associated with future states, near and far. Anticipation heightens our awareness of current states.</p> <p>designingfutures.ca</p>

<p><b>Design Habits</b></p> <p><b>On the road to mastery, learn from travelers</b></p> <p>designingfutures.ca</p>	<p><b>Design Habits</b></p> <p><b>On the road to mastery, learn from travelers</b></p> <p>designingfutures.ca</p>	<p><b>Design Habits</b></p> <p><b>On the road to mastery, learn from travelers</b></p> <p>designingfutures.ca</p>	<p><b>Design Habits</b></p> <p><b>On the road to mastery, learn from travelers</b></p> <p>designingfutures.ca</p>
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<p><b>On the road to mastery, learn from travelers</b></p> <p><b>Shadow Challenge</b></p> <p>Spy on another department. Observe their workflow, identify potential areas for improvement and present your design solutions.</p> <p>designingfutures.ca</p>	<p><b>On the road to mastery, learn from travelers</b></p> <p><b>Dream Studio</b></p> <p>Tour a local design studio or imagine your ideal design workspace. Sketch your dream layout, highlighting the must-have features that fuel your creativity.</p> <p>designingfutures.ca</p>	<p><b>On the road to mastery, learn from travelers</b></p> <p><b>Designer Coffee chats</b></p> <p>Mochas and mockups, lattes and literacy! Arrange a scheduled meetup with a peer designer and chat about your current challenges and inspirations.</p> <p>designingfutures.ca</p>	<p><b>On the road to mastery, learn from travelers</b></p> <p><b>Lend Your Skills</b></p> <p>Volunteer and assist with co-design projects. Help facilitate, design workshops, gather insights and learn from fellow designers. Strive to make a design difference.</p> <p>designingfutures.ca</p>
<p><b>On the road to mastery, learn from travelers</b></p> <p><b>Critique Swap</b></p> <p>Share projects with peers, without explaining your work. Listen to the feedback and share how you might incorporate this in your next iteration.</p> <p>designingfutures.ca</p>	<p><b>On the road to mastery, learn from travelers</b></p> <p><b>Job Interview</b></p> <p>Interview a colleague from another industry or profession. Ask about their gains and pains, what's happening in their industry and their career aspirations.</p> <p>designingfutures.ca</p>	<p><b>On the road to mastery, learn from travelers</b></p> <p><b>Design Bookworms</b></p> <p>Start a design book club! Read and discuss books, journals and articles with fellow novice designers. Imagine where you might apply these learning.</p> <p>designingfutures.ca</p>	<p><b>On the road to mastery, learn from travelers</b></p> <p>Inexperienced designers can learn from peers and intermediate designers. For novice designers to learn from peers, the design process needs to be reflexive and accessible.</p> <p>designingfutures.ca</p>



<p>Design Habits</p> <p><b>Design Literacy Matters</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p><b>Design Literacy Matters</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p><b>Design Literacy Matters</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p><b>Design Literacy Matters</b></p> <p>designingfutures.ca</p>
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<p>Design literacy matters</p> <p><b>Time Warp Twist</b></p> <p>Pick a design period: Art Deco, Bauhaus etc. &amp; research this era. Capture the essence of the era - materials, colours and apps those to a modern product.</p> <p>designingfutures.ca</p>	<p>Design literacy matters</p> <p><b>Junk Drawer Design</b></p> <p>Unearth hidden treasures. Design something new with 3 items from your junk drawer. Imagine a user for this product/service and capture how they might interact with it.</p> <p>designingfutures.ca</p>	<p>Design literacy matters</p> <p><b>Designer Mashup</b></p> <p>Research and select two designers from different eras e.g. Ray Eames and John Maeda. Consider their design styles, their bodies of work, and then imagine a product that merges their influences.</p> <p>designingfutures.ca</p>	<p>Design literacy matters</p> <p><b>Deconstruct Design Icon</b></p> <p>Choose a celebrated design icon e.g. Bauhaus Chair, Apple Computer and research its historical context, design principles employed, and its lasting impact. Try and analyse how the designer challenged or embraced existing trends.</p> <p>designingfutures.ca</p>
<p>Design literacy matters</p> <p><b>Design Lineage</b></p> <p>Choose a common object - chair, lamp, phone and research its design history. Trace its evolution, identifying key designers and cultural influences.</p> <p>designingfutures.ca</p>	<p>Design literacy matters</p> <p><b>Unintended Consequences</b></p> <p>Research a well-known historical design with negative consequences e.g. early car designs, aircraft. Analyze the design decisions, the social context and how these factors may have contributed to the outcomes.</p> <p>designingfutures.ca</p>	<p>Design literacy matters</p> <p><b>Seek Out Critique</b></p> <p>Present your current work to someone unfamiliar with design (friend, family member) &amp; actively listen to their feedback, focusing on what they find confusing or lacking clarity. Reflect on their perspective.</p> <p>designingfutures.ca</p>	<p>Design literacy matters</p> <p>Design history provides context to where design has come from and what it might transform into. Knowing what has come before, even with bias &amp; unintended consequences, builds nuance. Designers must consistently seek out critique of their work.</p> <p>designingfutures.ca</p>

<p>Design Habits</p> <p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p>designingfutures.ca</p>
<p>Design Habits</p> <p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p>designingfutures.ca</p>
<p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p><b>Nature's Inspiration</b></p> <p>Find design inspiration outdoors! Embark on a nature walk, focusing on textures, patterns, shapes and colours. Wonder how might nature inform your future designs.</p> <p>designingfutures.ca</p>	<p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p><b>Uncharted Territory</b></p> <p>Dive into a new art movement, genre of music you haven't listened to before, or an unfamiliar design discipline. Identify elements and trends that are new to you.</p> <p>designingfutures.ca</p>	<p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p><b>Eyes of a Traveler</b></p> <p>Imagine you have arrived in a new city, with different street signs and transit systems. Look at your actual city/town and note what you've taken for granted.</p> <p>designingfutures.ca</p>	<p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p><b>Service Remix</b></p> <p>Reimagine a frustrating service you've encountered. Analyze the pain points, brainstorm improvements &amp; redesign the user experience.</p> <p>designingfutures.ca</p>
<p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p><b>Design for the Senses</b></p> <p>Challenge yourself to design an experience that appeals to multiple senses - sight, sound, touch, taste and smell. Focus on creating a holistic experience that goes beyond aesthetics.</p> <p>designingfutures.ca</p>	<p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p><b>Frame the Details</b></p> <p>Create a simple picture frame out of card. Use it to restrict your focus in a space e.g. a library, a town square. Capture the details that are revealed to you as you frame your focus.</p> <p>designingfutures.ca</p>	<p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p><b>Unplug &amp; Observe</b></p> <p>Choose a busy location - park, market, cafe - and spend 30 minutes observing people without taking notes. After returning home/office, record and review your observations.</p> <p>designingfutures.ca</p>	<p><b>Go beyond the algorithm &amp; nurture curiosity</b></p> <p>Designers need to embrace intentionality in their own practice, actively seeking out non-traditional views &amp; perspectives. Intentional habits of curiosity, inspiration and reflection need to extend beyond social media algorithms.</p> <p>designingfutures.ca</p>

<p>Design Habits</p> <p>Design for <b>depth</b> over scratching the <b>surface</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p>Design for <b>depth</b> over scratching the <b>surface</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p>Design for <b>depth</b> over scratching the <b>surface</b></p> <p>designingfutures.ca</p>	<p>Design Habits</p> <p>Design for <b>depth</b> over scratching the <b>surface</b></p> <p>designingfutures.ca</p>
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<p>Design for <b>depth</b> over scratching the <b>surface</b></p> <p><b>Niche Discovery</b></p> <p>Pick a problem space that you're interested in e.g. fashion, sports, music. Identify eight emerging entrants in this space - what are they doing differently? Now combine those traits to imagine a new offering.</p> <p>designingfutures.ca</p>	<p>Design for <b>depth</b> over scratching the <b>surface</b></p> <p><b>The Unintended Journey</b></p> <p>Map out the entire user journey for your design solution. Go beyond initial interactions and consider the post-use experience, potential disposal and environmental impacts.</p> <p>designingfutures.ca</p>	<p>Design for <b>depth</b> over scratching the <b>surface</b></p> <p><b>Prototype Playground</b></p> <p>Move beyond a single prototype. Embrace rapid, low-fidelity prototyping and create multiple iterations. Strive to combine aesthetics, functionality and usability and work towards a complete user experience.</p> <p>designingfutures.ca</p>	<p>Design for <b>depth</b> over scratching the <b>surface</b></p> <p><b>Back to the Future</b></p> <p>Instead of simply projecting your design into the future, try a "backcasting" approach. Imagine a future where your design has been implemented for several years - consider long-term impact and adaptability.</p> <p>designingfutures.ca</p>
<p>Design for <b>depth</b> over scratching the <b>surface</b></p> <p><b>The Borrowed Lens</b></p> <p>Seek inspiration from design disciplines outside your area of expertise e.g. product, service, fashion, social and systems design. Explore one framework from this discipline that you can borrow for your current projects.</p> <p>designingfutures.ca</p>	<p>Design for <b>depth</b> over scratching the <b>surface</b></p> <p><b>Deep Data Dive</b></p> <p>If your design involves the collection of data or user feedback, don't skim the surface. Take iterative dives into your data to identify patterns, outliers and user behaviour. What stands out to you?</p> <p>designingfutures.ca</p>	<p>Design for <b>depth</b> over scratching the <b>surface</b></p> <p><b>Iceberg Insights</b></p> <p>Consider your design solution as the tip of an iceberg. Dive deeper into your design and consider what lies beneath - underlying systems, technologies, social and ethical factors.</p> <p>designingfutures.ca</p>	<p>Design for <b>depth</b> over scratching the <b>surface</b></p> <p>Designers need to embrace depth and iteration in their approach to projects and their own growth. They need to learn to balance the spiral of research with an ability to consider competing options. Avoiding one-and-done, helps build design expertise.</p> <p>designingfutures.ca</p>

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