BUSINESS DESIGN

A new way forward.
A powerful tool for unlocking social value.

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Stephanie Fauquier

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Abstract

Wicked problems are features of modern life, which is complex, volatile, and unruly. The speed of change is unprecedented, requiring new models for problem solving that create space for flexibility, agility, and fluidity. Design Thinking, a human-centred approach to problem-solving, has led to the emergence of Business Design. This paper explores the current understanding and application of business design as a discipline. The paper makes the argument that business design is a dynamic problem solving approach that can be applied to problems beyond business and organizations. As the discipline matures, five attributes - (1) Analogical Thinking, (2) Curiosity Driven Inquiry, (3) Systems Thinking, (4) Data Translator, and (5) Incrementalism and Foresight - will define the next generation of business design.

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I love you.

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INTRODUCTION

Wicked Problems - A Starting Point

In 2009, it was estimated that the average American consumed 34 gigabytes of data and information each day; an increase of about 350% over the last three decades (Bilton, 2009). "Today, every two days we create as much data as we did from the beginning of time until 2000" (Marr, 2021). The volume of information and events that humans will be required to comprehend, interpret, and react to will continue to increase and become more complex. How humans and organizations respond to these events will be critically important.

"How can we prepare ourselves and our children for a world of such unprecedented transformations and radical uncertainties?" (Harari, 2018).

This new reality of complexity and unpredictability will force humanity to wrestle with "wicked problems" due to the speed of change in technology, commerce, health, and climate (Rittel & Melvin, 1973).

A wicked problem occurs "when organizations face constant or unprecedented challenges… has innumerable causes, is tough to describe, and doesn't have a right answer " (Camillus, 2008). "Wickedness isn't a degree of difficulty; wicked issues are different because traditional processes can't resolve them" (Camillus, 2008).

Classic examples of wicked problems are environmental degradation, terrorism, and poverty - whereby they are the opposite of ordinary problems which can be solved in finite time by applying standard techniques (Camillus, 2008). Standard techniques can help solve these problems to an extent, but the nature of wicked problems requires mental flexibility and agility. One of the biggest difficulties with solving complex, wicked problems is contending with disagreement among stakeholders and interested parties.

In 1973, Horst W.J. Rittel and Melvin M. Webber published in Policy Sciences a formative work on the understanding of wicked problems in social sciences. The authors indicate that, unlike science problems, social science problems are inherently more difficult and complex to solve due to their ambiguity. The difficulty with solving wicked problems is that they don't have a single prescribed solution, they can be symptoms of other problems, they have no clear right or wrong outcome, and the solver typically has one shot at resolving the problem. The authors developed a list of the ten defining elements that demonstrate the wickedness of the problem. This author includes a summarized version of the ten elements from John C. Camillus' article. (Camillus, 2008). (Please refer to the sidebar to view them and see further detail.)

Ten Elements of Wicked Problems

1.There is no definitive formulation of a wicked problem.
It's not possible to write a well-defined statement of the problem, as can be done with an ordinary problem.

2. Wicked problems have no stopping rule.
You can tell when you've reached a solution to an ordinary problem. With a wicked problem, the search for solutions never stops.

3. Solutions to wicked problems are not true or false, but good or bad. Ordinary problems have solutions that can be objectively evaluated as right or wrong. Choosing a solution to a wicked problem is largely a matter of judgment.

4. There is no immediate and no ultimate test of a solution to a wicked problem. It's possible to determine right away if a solution to an ordinary problem is working. But solutions to wicked problems generate unexpected consequences over time, making it difficult to measure their effectiveness.

5. Every solution to a wicked problem is a "one-shot" operation; because there is no opportunity to learn by trial and error, every attempt counts significantly. Solutions to ordinary problems can be easily tried and abandoned. With wicked problems, every implemented solution has consequences that cannot be undone.

6. Wicked problems do not have an exhaustively describable set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan. Ordinary problems come with a limited set of potential solutions, by contrast.

7. Every wicked problem is essentially unique. An ordinary problem belongs to a class of similar problems that are all solved in the same way. A wicked problem is substantial without precedent; experience does not help you address it.

8. Every wicked problem can be considered to be a symptom of another problem. While an ordinary problem is self-contained, a wicked problem is entwined with other problems. However, those problems don't have one root cause.

9. The existence of a discrepancy representing a wicked problem can be explained in numerous ways. A wicked problem involves many stakeholders, who all will have different ideas about what the problem really is and what its causes are.

10. The planner has no right to be wrong. Problem solvers dealing with a wicked issue are held liable for the consequences of any actions they take because those actions will have such a large impact and are hard to justify.

The New Reality

Now and in the future, humanity will need to successfully grapple with these new and challenging wicked problems. We will need to continue working towards solutions for complex problems such as income and gender inequality, climate change and sustainability, and chronic disease. With an inherent lack of structure and direction, wicked problems add another layer of difficulty for organizations and governments to overcome. Mental models are helpful for framing our understanding and thinking. Mental models are "deeply ingrained assumptions, generalizations, or even pictures and images that influence how we understand the world and how we take action" (Senge, 1994). To have a fighting chance against these wicked problems, it will require mental models that are agile, flexible, promote fluid thinking, and encourage the relentless pursuit of creative outcomes.
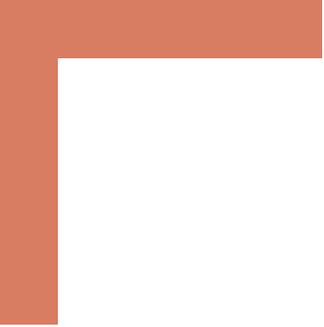
Early advances in computational power created a foundation for improved data analysis and information processing. Access to data in the early 1950s was the start of the wave of technology, particularly computational power which is the supercharging force behind the movement towards a knowledge economy. Since the 1950s, we have gone from bulk data to information to knowledge. Before the widespread access to data and information, managers were left to solve problems anecdotally by leveraging static business information, such as annual or quarterly performance reports. The shift has occurred as computers enabled managers to explore and access large volumes of data; a first. Managers are now able to dig deeper into discovery and test hypotheses to understand the reasons for a given outcome. From this point, the shift turned into information, which provided and supported insights delivery. "Information is data that has been arranged into meaningful patterns" (Davis & Botkin, 1994). Wrestling with these patterns provided new opportunities for managers to consider alternative outcomes. We are currently in the "knowledge" phase. We have knowledge whereby we are able to harness the power of data and turn it into meaningful and actionable decisions. These decisions are multi-dimensional laced with nuance and detail.

Coupled with the shift from data to information to knowledge, business performance was shifting away from traditional linear economies. Until recently, business success was driven by linear "heuristic to algorithmic" improvements - i.e. tweaks or minor improvements to products, supply chain, customer service, and cost controls (Martin, 2013, 15). This is the traditional centrally-driven economic view that a company creates wealth by "getting better and better at doing the same thing" (Martin, 2013, 16). This is not true anymore - the greatest advantage is created by imagining or reimagining products, services, and experiences. "Competition is no longer in global scale-intensive industries; rather it's in non-traditional; imagination intensive industries" (Martin, 2013, 16).

With a shift towards a knowledge-based economy, these new skills requirements will be fundamental - if not mandatory. "Changing technology is driving the next wave of economic growth. To take advantage of that growth, [humanity] will have to apply not only new technology but also new thinking" (David and Botkin, 1994). Humanity has been for decades in the throes of a knowledge economy. A knowledge economy frees up capacity from physical and manual labour to new types of work. This shift has occurred with the movement from data to information to knowledge (Ackoff, 1999). "These are turbulent times for business, as companies struggle to adjust to the globalization of markets and competition, the expansion of the service-based economy, the impact of deregulation and privatization, and the explosion of the knowledge revolution." (Martin, 2013, 15)

Automation, artificial intelligence (AI), and digital technologies are critical now and well into the future and will require humans to constantly relearn, upgrade their skills, and rebrand them-

selves throughout their lifespan. "In a labour market that is more automated, digital, and dynamic, all [humans] will benefit from having a set of foundational skills… no matter the sector in which they work or their occupation: (1) add value beyond what can be done by automated systems and intelligent machines, (2) operate in a digital environment, and (3) continually adapt to new ways of working and new occupations" (Dondi, Klier, Panier, and Schubert, 2021). Education and learning will also need to be augmented to provide training in critical and lateral thinking, understand empathy and emotions, and apply technology's physical workings (OCED, 2021). "Cognitive skills are essential… creativity and critical thinking are needed to find solutions to complex problems." (OECD, 2021, 5).

A New Way Forward

To compete in this new environment will require outside-of-the-box thinking. The nature of problems affecting governments and organizations will be complex and unknown. New methodologies such as Design Thinking will provide new approaches as well as innovation. Design Thinking creates purpose-driven mandates that drive more meaningful innovation and customer experiences (Lockwood and Papke, 2018). Design Thinking is an interactive process, whereby we seek to understand the user's challenges and ultimately redefine the problem in an attempt to identify alternative strategies and solutions (Dam and Siang, 2020). Design Thinking takes a particular interest in understanding the needs, challenges, and wants of the end users.

Within Design Thinking is a rough concept called Business Design. In partnerships with design researchers and technologists, business designers look at a problem from the point of viability; the critical success factors of entering a market. Practi-

tioners are not only providing solutions for business, but use the same methodology and thinking to solve social innovation problems. Business design is a versatile tool that can tackle a wide spectrum of problems.

The paper will explore in detail the opportunities for business design to grow and mature as a discipline to tackle wicked problems. Human life will continue to be more complex, and it will take practitioners with varied skills and experiences to navigate, innovate, and provide solutions for a new way forward.

METHODOLOGY & RESEARCH QUESTIONS

At the root of this research is the ambition to create a model for understanding the discipline of business design. With this goal in mind, the research took a thematic and content approach to analysis. This approach was taken with the purpose of providing freedom to identify trends, patterns, and understand common and divergent elements.

This approach provided the flexibility and latitude to create a framework for analysis that led to the ultimate project outcome - a flexible model that describes the five attributes of the next generation of business design. A model of business design has been selected to allow for flexibility as the discipline matures. The intention of this research is not to create a single, definitive definition of business design, but rather to articulate a path forward for the emerging discipline.
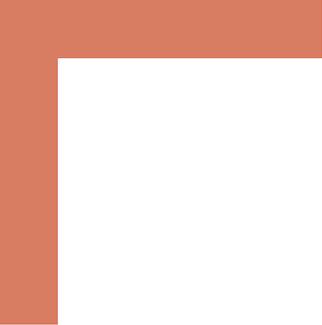
At the outset of the project, the author had a working hypothesis that business design was being used as an interchangeable term (or jargon) by practitioners and organizations to reflect agility, newness, strategy, and the inclusion of Design Thinking into work process and delivery. Despite best intentions, business design continues to be used interchangeably, without consistency or commonality. The term has been used to mean different things to different practitioners, groups, and organizations. At times, business design has reflected a new approach to strategy that supported customer centricity and business model design (including return on investment for innovation), and other times it was a new name for traditional strategy models.

To complete the research assignment, the author established one primary research question, supported by three secondary research questions to help facilitate discovery.

Primary Research Question:
• How might we think about "Business Design" as a standalone discipline?

Secondary Research Questions:
• What is business design? What are the critical (and necessary) elements of the discipline?

• What tools and thinking are required to support business design as it evolves?

• What is a curiosity- and inquiry-driven discovery method?

To this end, the author is interested in understanding the common elements that define business design, and the aspects that make it a unique discipline. In order to answer the primary and secondary research questions, the author completed the analysis using three key steps:
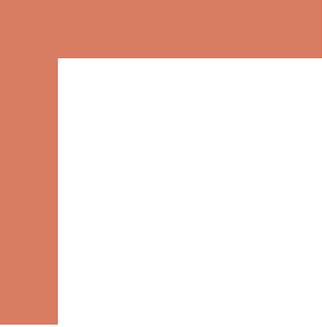
Step 1. Environmental Scan & Context Setting

To begin, the author completed an environmental scan with the purpose of identifying prominent authors, content creators, speakers, and other notable sources. The environmental scan was completed to develop a working knowledge of business design, and the nuances of the discipline. It is here that the study established a baseline of information and working knowledge. At the same time, the environmental scan investigated other avenues of information to include in the study, such as Design Thinking, strategy frameworks, mental and data models, qualitative and quantitative discovery tools, creativity for innovation, and probability forecasting and collective decision making.

The broad review was deliberately taken during the environmental scan to observe convergent and divergent thinking.

Step 2. Analyzing the Information

Using the sources collected during the environmental scan, the author started compiling and analyzing the information. That included identifying patterns, trends, similarities and differences for business design. It was important to establish the parameters of business design to understand where the discipline can grow and mature. As the model for business design is flexible, it provided the guide rails to then develop the traits of the next generation of business design. Analyzing the information provided insights into developing the recommendations and insights.

Step 3. Designing the Future State

This step focused on articulating what the future traits of a business designer might look like. Based on the broad reading and analysis done in steps 1 and 2, the author identified what the future of business design could look like.

COMPETITIVE ADVANTAGE THROUGH DESIGN

Competitive advantage is "a condition or circumstance that puts a company in a favourable or superior business position" (Oxford Languages, 2021). Renowned strategist Michael Porter says "a firm creates a sustainable competitive advantage over its rivals by 'deliberately choosing a different set of activities to deliver unique value'" (Lafley and Martin, 2013, 3). Competitive advantage is created by developing and deploying a strategy unique to the organization's capabilities, market position, and resources. Strategy is then a series of choices. "Strategy is an integrated set of choices that uniquely position the firm in its industry to create sustainable advantage and superior value relative to competition" (Lafley and Martin, 2013, 3). Once choices have been made it is then a commitment to achieving and seeing those goals through. "Strategy is a commitment to a set of coherent, mutually reinforcing policies or behaviours aimed at achieving a specific competitive goal." (Pisano, 2015).

Competitive advantage requires creating a strategy by making a series of unique choices and decisions. Simple? Straightforward? Not typically.

To approve a strategy, organizations often require it to meet established thresholds and go through lengthy and repetitive review processes. The strategy process is often cumbersome and weighs down organizations with general or broad data sets and inputs (Golby-Smith, 2013, 38). This can negatively impact the organization's ability to act quickly and create a competitive advantage through speed to market. "Arguably, the strategy process is one of the weakest processes in most organizations. [Organizations] are far better equipped for defending the status quo than they are for inventing and shaping new futures" (Golby-Smith, 2013, 38). For example, budget processes are hard-wired to analyze and evaluate ideas based on the current environment, propping up the status quo and leaving little room for newness and innovation (Golby-Smith, 2013, 39).

If strategy and competitive advantage are so interconnected, why is the current approach cumbersome? "Most executives cannot articulate the objectives, scope, and advantage of their business in a simple statement. If they can't, neither can anyone else" (Collis and Rukstad, 2008). That is the problem with classic, top down strategy processes; they leave little room for innovation and exception.

This paper wants to distinguish between enterprise strategy and innovation strategy, as the distinction is important. Enterprise strategy is a commitment to seeing through a set of coherent policies and behaviour with the purpose of achieving a specific competitive advantage (Pisano, 2015). "Good strategies promote alignment among diverse groups within an organization, clarify objectives and properties, and help focus efforts around them. Companies regularly define their overall business strategy (their scope and positioning) and specify how various functions - such as marketing, operations, finance, and R&D - will support it"

(Pisano, 2015). Strategy executed at the enterprise level is not the same as an innovation strategy. Innovation strategy without a vision can quickly become unruly and misguided - i.e. investing in a venture capital arm, brainstorming with customers, or crowdsourcing ideas (Pisano, 2015). This type of innovation is driven without an understanding of the expected and intended outcome. An organization's ability to innovate is driven by an innovation system. The innovation system is "a coherent set of interdependent processes and structures that dictates how the company searches for novel problems and solutions, synthesizes ideas into a business concept and product designs, and selects which projects get funded… without an innovation strategy, a company can't make trade-off decisions" (Pisano, 2015). These tradeoff decisions support prioritization and direction, which is critical to achieving an innovation strategy.

This study is interested in innovation strategy which requires the ability to weigh tradeoffs in order to make decisions. To solve wicked problems inherently requires the solutioner to make tradeoffs in order to plot a path forward.

Strategy is about thinking of new possibilities and uncovering new opportunities. "Strategy is not about delivery and efficiency: it is about discovering alternative possibilities" (Golby-Smith, 2013, 39). Design Thinking is that bridge; it's a new way forward that can unlock fresh, untapped potential.

"Business strategists tend to be well-versed in the identification and analysis of constraints...with relatively little attention paid to the creative aspects of strategy formulation" (Liedtka and Friedel, 2013, 191). Design thinking leverages deductive, inductive, and abductive reasoning to unleash creativity and innovation (Vossoughi, 2013, 197).

By leveraging deductive and inductive reasoning the solutioner is provided with a flexible structure to attempt problem solving. Deductive reasoning starts with general insights and works

towards more specifics; a top down approach. Inductive reasoning works in a similar way, except it starts with more specific observations and moves to more generalized outcomes. Deductive and inductive reasoning provide lateral and multi-dimensional thinking which is helpful for solving wicked problems that are time sensitive and lack obvious guide rails. The dynamism creates an inherent competitive advantage that strategy alone cannot quite achieve.

Add in the third dimension: abductive reasoning. Abductive reasoning begins with an incomplete set of observations and proceeds with the likeliest outcome based on the facts established. This type of reasoning provides structure when dealing with many unknowns. Similar to the game of Mastermind, informed guesses lead to a conclusion about the likelihood of the right pattern. To win the game requires confidence in selecting a pattern based on the best possible outcome given the little information available. This is based on making (where possible)

informed decisions and testing them using the information available. This is similar to solving wicked problems, much of the information is unknown. Abductive reasoning provides some structure when a known or established framework is not available.

Design Thinking has an inherent advantage as it regularly leverages deductive, inductive, and abductive thinking; a style different from the scientific method. The scientific method (the classical or primary method for inquiry) assumes preexisting knowledge and information of the problem. To apply the scientific method requires boundaries of knowledge around the problem as well as a clear hypothesis. Unfortunately, with wicked problems it is unlikely or (nearly) impossible to start with a hypothesis. Design Thinking on the other hand encourages the problem solver to take a wide, and open ended approach to problem solving by creating new knowledge to drive the inquiry. When a preliminary hypothesis is not available, Design Thinking provides

latitude to use deductive, inductive, or abductive reasoning or another methodology to draw insights to develop into an eventual working hypothesis.

Innovation is often synonymous with design and the designer's toolkit. As Charles Owen said, "Innovation, a critical factor in business competition, is a more complex concept than many realize. Far more than principles, rules and procedures, it is a process most effective when imbued with attitudes and ways of thinking that have evolved over generations within the community of those who routinely practice creative invention and synthesis" (Owen, 2006). Design provides strategists with an edge due to its long, evolving history.

The designer's toolkit provides strategists with another competitive advantage. It encourages (and to some degree) demands the strategist to employ empathy and understanding for the end user. With Design and Design Thinking, the end user is at the heart of problem solving. By tackling problem solving through the end user's lens, products, services, and experiences are created with intention and understanding of what is required, thus providing better focus and alignment for market entry and fit.

Moving forward, as organizations and governments begin to think about tackling wicked problems, the challenge will be how to incorporate design into, and throughout, the problem solving process as well as into its decision making. The "challenge for the next decade… how might organizations build deep design thinking skills and creative leadership at all levels?" (Brown, 2015). Creative leadership will be important for diversity of thought and solutions.

DESIGN THINKING
— IT STARTS HERE

Design as a human interest and condition is not new and dates back to the beginning of human innovation. "Design, in the most generic sense of the word, began over 2.5 million years ago when *homo habilis* manufactured the first tools. The urge to design—to consider a situation, imagine a better situation, and act to create that improved situation— goes back to our pre-human ancestors. Making tools helped us to become what we are—design helped to make us human" (Dorst, 2015, vii). Design acted as a competitive advantage for early humans; creating the capacity to problem-solve and innovate. This inventiveness helped improve the human condition; a critical feature of human survival and development.

Humans' innate drive to problem solve, find and apply a solution, and innovate has evolved into a formal methodology called - Design Thinking. At its most foundational, design thinking is

"a human-centered innovation process that emphasizes observation, collaboration, fast learning, visualization of ideas, rapid concept prototyping, and concurrent business analysis" (Liedtka, 2015, 926). This philosophy applies a hands-on, user-centric approach to problem-solving, which leads to differentiation and competitive advantage (Moran, 2021).

The nomenclature 'design thinking' first appeared in 1987 in a book published by Peter Rowe, a professor of architecture and urban planning at Harvard School of Design (Liedtka, 2015, 926). Rowe's use of the term design thinking was made in reference to architectural design, and not in reference to problem-solving or business at large (Liedtka, 2015, 926).

Design thinking is commonly associated with the global design firm IDEO, which brought the term into common business vernacular. "'design thinking' is a human-centred 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, 2021).

Design Thinking is an interactive process, whereby we seek to understand the user's challenges and ultimately redefine the problem in an attempt to identify alternative strategies and solutions (Dam and Siang, 2020).

IDEO popularized design thinking with a three-circle Venn diagram that represented desirability, viability, and feasibility. Design thinking "uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity" (Martin, the design of business, 62). "In employing design thinking, you're pulling together what's desirable from a human point of view with what is technologically feasible and economically viable" (IDEO U, 2020). The overlap of the three circles is the design sweet spot.

Design Thinking is important because it works to unlock longer-term value for customers, end users, and the public. Design Thinking achieves this by:

- **Solving concrete human needs**
"Using an observational, human-centric approach, teams can uncover pain points from the consumer that they hadn't previ-ously thought of, ones that the consumer may not even be aware of. Design thinking can provide solutions to those pain points once they're identified." (Tuttle, 2021).

- **Tackling problems that are ambiguous or difficult to define** "Consumers often don't know what problem they have that needs solving or they can't verbalize it." (Tuttle, 2021). Through observation, fieldwork, and information gathering, teams can unpack problems they see and identify possible solutions. "This helps define ambiguous problems and in turn makes it easier to surface solutions." (Tuttle, 2021).

- **Creates opportunities for more innovative solutions**
"Humans are not capable of imagining things that are not believed to be possible, which makes it impossible for them to ask for things that do not yet exist. Design thinking can help surface some of these unknown pain points that would otherwise have never been known" (Tuttle, 2021).

DESIGN THINKING VENN DIAGRAM
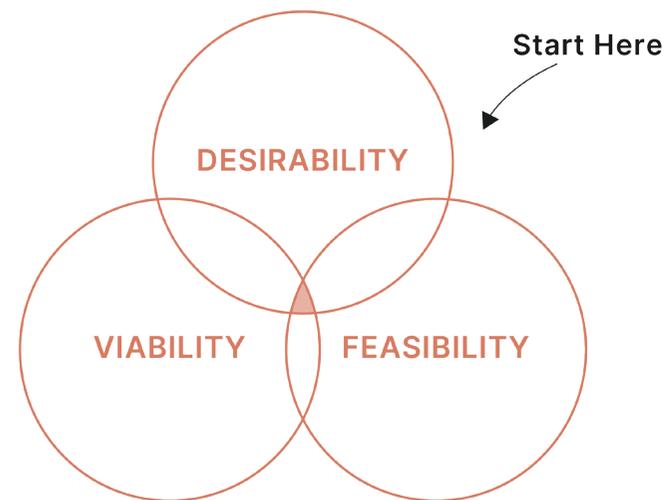
Figure 1, "Design Thinking Venn Diagram"

BUSINESS DESIGN 101

Understanding Business Design ———

The term business design is relatively new, and the discipline itself is even newer. As a term, business design started appearing in design and business literature in the late 2000s. The newness of the term is apparent as authors reference different aspects of the emerging discipline. The result: limited clarity and consistency. Most commonly business design references the economic viability or return on innovation investment. Business design is "a methods-based approach to innovation that helps teams get to bigger breakthroughs faster and define strategies for competitive advantage" (Fraser, 2013, 251). More recently, business design has also been used to connote flexibility for lateral thinking to construct approaches to identifying new competitive structures to drive competitive advantages in markets.

For reference and understanding, this author has included a definition of business design to provide context. The definition from IDEO focuses on profitability, mindset, and toolkit, which are foundational elements of the discipline.

- **IDEO**: Business design is "a way of operating that combines the tools of business thinkers, analysts, and strategists with the methods and mindsets of design. Business designers think about how every element of the business model affects the consumer and client experience" (IDEO U, 2021).

What do Business Designers actually do, though?

Business design is tied to "viability" in the design thinking Venn diagram. In that relationship, business design is responsible for business model innovation, profitability, and market entry. Working with cross-functional teams, business designers work with strategists, user researchers, designers, technologists, and business stakeholders (i.e. sales, HR, finance, operations) to complete projects. Team composition can vary by project. Below, this author captures four categories of work completed by business designers. It is not exhaustive, but rather illustrative of the common tasks completed. The categories were created based on reviewing the literature, and grouping and summarizing job descriptions. This author has been collecting job descriptions to use as a barometer to understand how business design is evolving.

Today, business designers complete four broad categories of work: (1) business model innovation, (2) market entry strategy, (3) user testing and customer validation, and (4) operations and team management.

1. Business model innovation:

Business models are stories or building blocks that explain how an enterprise, company, or product works. Business models are different from strategies. Business models "describe as a system how the pieces of a business fit together" (Magretta, 2002, 3). A business model answers questions about who is the customer, what is the value proposition, how will this business make money, what is the cost structure (Osterwalder and Pigneur, 2010, 17). "A successful business model represents a better way [forward] than the existing alternatives'" (Magretta, 2002, 2). Sample activities:

○ Translating customer needs and problems through to the business model viability phase of the innovation process, including incubation and commercialization (Board of Innovation, 2021)

○ Understanding the client/user/buyer business strategy, needs, cost structure, competitive landscape, and business-critical

must-wins (Board of Innovation, 2021)

○ Define the business options and case for new ventures, products, and services; including economic model and business plan

○ Develop business case strategy, quantify business value and available funding models

○ Design and defining new and disruptive revenue model options Helping teams prototype, test, and develop new business models; identify innovation roadmaps

2. Market entry strategy: It is used to inform an organization of the size - number of customers, expected sales, and size of market when considering entering into a new market. Sample activities:

○ Assessing the total addressable market (TAM), serviceable

available market (SAM), serviceable obtainable market (SOM)

○ Complete ongoing competitive, market analysis, strategic intelligence research, and identify market opportunities

○ Ensure each element of the business model fits with the desired customer experience

3. User testing and customer validation:
Validate user product or idea fit before rolling out and scaling up the idea. The purpose of this phase is to learn quickly, adapt, and incorporate customer feedback. Once the product reaches the market it has been tested and validated with users, thus allowing the organization to achieve the targets established in the market entry strategy. Typically user testing is done to evaluate usability. Sample activities:

○ Designing experiments to test and de-risk critical business

model assumptions (Board of Innovation, 2021)

○ Building go-to-market experimentation roadmaps and plans for new business models (Board of Innovation, 2021)

○ Synthesis of customer and market feedback to recommend opportunities for change or improvement in future product or service iterations

○ Seeing projects through to the solution-fit and incubation up to market scaling phases. This tends to happen within business units or as separate organizational entities entirely (Board of Innovation, 2021)

○ Craft a research plan comprised of interviews, surveys, work-shops, and observation to gather understanding and insights to surface opportunities on the organization or customer user groups

4. Operations and team management:

Critical for project success, the business designer supports the team with project management to meet critical deadlines. Sample activities:

○ Lead, manage, and collaborate with cross-functional, multi-disciplinary teams; including defining roles and responsibilities

○ Manage work plans, milestones, and key project deliverables, including project kick-off, status updates, and stakeholder sessions

○ Define key performance measurements and reporting frameworks

○ Design organizational structures and strategic assets to help companies support new offers and drive innovation

Business Design is not Strategy 2.0

The design and innovation processes inherently encourage flexibility, latitude, and fluidity of thought, response, and solution. "It takes a combination of the right mindset (being) and a rigorous methodology (doing) that unlocks a person's thinking, and that one must consider all three of these factors to fully realize the potential of Business Design" (Fraser, 2013, 251). Despite the flexibility of the model, Business Design does have limitations. Below, this author discusses areas that are not aligned with the meaning of Business Design.

● **Business Design is not Strategy / Management Consulting 2.0:** Due to the similarities and type of work performed by strategy and management consultants, Business designers are often lumped into the same groups and assumed to be one and the same. This view is too simplistic, as business designers bring a different mindset and toolkit to problem-solving. Business design is not Strategy 2.0.

The objectives of a business designer and strategy consultant are different. Strategy consultants typically work with organizations to improve enterprise-level strategy and not innovation strategy. The success of projects for strategy consultants is measured by shareholder value, revenue, operational efficiency or another business-centric performance measurement. On the other hand, business design works to question, challenge, and transform outdated models and thinking (Osterwalder and Pigneur, 2010, introduction). "How can we turn visionary ideas into game-changing business models that challenge the establishment or rejuvenate it" (Osterwalder and Pigneur, 2010, introduction).

Strategy consultants leverage (depending on the problem) frameworks such as Porter's Five Forces to assess industry competition, attractiveness, and profitability; or Martin and Lafley's infamous "Playing to Win" approach to strategy. These frameworks provide top-down thinking and limit broader creative thinking that requires latitude and flexibility.

Business design leverages the Business Model Canvas made famous by Alexander Osterwalder and Yves Pigneur at Strategyzer. The Business Model Canvas "is about creating value, for companies, customers, and society. It is about replacing outdated models" (Osterwalder and Pigneur, 2010, introduction).

Viability is a critical element of business design; however, it is limiting if taken literally. Within Design Thinking, business design provides the 'business engine' to assess the likelihood of success of a problem, product, service, and experience. If taken literally, this is a simplistic view of what a business designer can do. Business designers provide new ways of thinking that transcend value to uncover markets, problems, and other avenues not yet explored. Business designers are able to flex macro (higher level) and micro (detail level) thinking.

- **Business Design is not a Sub-Discipline of Design:** It is simplistic and minimizes the contributions of a business designer to assume business design is a sub-discipline of design. Business design is a valuable third of the Design Thinking Venn diagram of desirability, viability, and feasibility.

Business design is its own discipline with practitioners with different skills. Designers with one business course are not then business designers. It might seem unnecessarily specific, however, it is an important distinction. Business designers leverage different mental models, skills, and experiences to project teams.

- **Business design is not Product Management:** Similar to strategy consultants, business design and product management are not the same.

Product managers are critical for managing and executing the strategy for a specific product, service, and/or experience.

The product manager creates the strategy specific to the product, service, experience that they are responsible for. The product manager is responsible for determining the key features of the product and determining market entry success. However, the product manager is not responsible for innovating and identifying new markets for the company. Innovation strategy is outside of the domain of the product manager. The product manager would inform and contribute to the organization's innovation strategy, however, it is not the responsibility or domain of the project manager.

BUSINESS DESIGN: NEXT GENERATION

In Design Thinking, business design is responsible for translating customer needs into viable business solutions that convert into customer value and market opportunity. Business design has attempted to perform this objective. However, with changing realities, business design is entering a next phase which will go beyond viability and tackle complex, wicked problems. The new normal is volatile, uncertain, complex, and ambiguous" (Lafley and Martin, 2013, 211). This changing reality requires a new way of thinking.

Discipline Agnostic. Business designers will continue to be discipline agnostic. The beauty of business design is that it does not have a required or mandatory discipline or training. Wicked problems will require new and diverse thinking. The ability to draw from many different disciplines will provide the necessary depth and relevance without over indexing on certain skills.

Generalists. Business designers are generalists with experience, skills, and interests that comprise a unique set. The discipline

requires the ability to think laterally, fluidly and draw on past experiences. It would seem that specialization is critical to solving problems due to domain knowledge. However, this is not true. In a world with specialists, generalists are needed to "reach across disciplines to communicate and bring diverse expertise together in a coordinated effort" (Owen, 2007, 49). The wider the base of knowledge you're drawing from the more likely to find creative inspiration (Owen, 2007, 49).

Next Generation: Five Attributes of a Business Designer

Modern life is changing rapidly, and business designers will be primed to help innovate and solve these next challenges. The paper introduces five attributes that are the defining elements of next generation business design. The attributes are selected for their ability to help navigate uncertainty. To draw connections with wicked problems each of the five attributes list the corresponding element of a wicked problem that it helps resolve.

WICKED PROBLEMS TACKLED BY NEXT GENERATION ATTRIBUTES

Next Generation Business Design Attributes	WICKED PROBLEM ELEMENTS									
	1	2	3	4	5	6	7	8	9	10
A. Analogical Thinking Analogical thinking can provide a starting point when an obvious one is not available.	X	X	X			X	X			
B. Curiosity Driven Inquiry The value of explicit information is dropping, asking 'why' uncover unseen opportunities and possibilities.			X		X		X			
C. Elegant Simplifier - Systems Thinking Systems are out of human control; pay attention, participate, and respond to feedback.		X						X	X	
D. Data Translator - Quantitative and Qualitative Methods Data is only as good and relevant as the questions they are being asked to answer.		X		X					X	
E. Incrementalism and Foresight Gradual assessment of facts can counter internal bias and assumptions in decision making.					X	X			X	X

Figure 2: Wicked Problems tackled by Next Generation attributes

Five Attributes of Next Generation Business Design

A. Analogical Thinking

Wicked Problems Tackled: 1, 2, 3, 6, and 7

Mental models and business design should be synonymous with each other, as they both work to distill complex ideas into manageable sound bites that humans can understand and relate to. Mental models provide points of reference that are used to ground abstract ideas into familiar concepts.

Daniel Kahneman famously described fast and slow thinking when he described System 1 (fast thinking) and System 2 (slow thinking) (Kahneman, 2011, 13). For efficiency, the brain prefers to default to System 1 for fast thinking to quickly (and automatically) make decisions to conserve energy. "System 1 operates automatically and quickly, with little or no effort and no sense of voluntary control" (Kahneman, 2011, 20). Daily activities require

The power of Design Thinking is the ability to use alternative logic models such as deductive, inductive, and abductive reasoning. The three types of reasoning allow for flexibility to comprehend unknowns and (quickly) make sense of them.

Analogical thinking is the next great mental model for problem-solving, and for business design. "Analogical thinking is the practice of recognizing conceptual similarities in multiple domains or scenarios that seem to have little in common on the surface. It is a powerful tool for solving wicked problems" (Epstein, 2019, 102-103). Information from one subject area can be applied to explain a concept in a field completely unrelated to the problem. Analogical thinking creates a multiplier effect by allowing more examples from different domains to be applied to (on the surface) unrelated problems. Analogical thinking can provide a starting point when an obvious one is not available.

"Analogical thinking takes the new and makes it familiar, or takes the familiar and puts it in a new light, and allows humans to reason through problems they have never seen in unfamiliar contexts. It also allows [humans] to understand that which we cannot see at all" (Epstein, 2019, 103). For example, we use terminology from biology - neural networks - to explain the concepts of artificial intelligence and how scanning of images creates pathways of information (Epstein, 2019, 103).

When we face problems that are not new to us personally, but to humans at large, there is no experience database to draw on (Epstein, 2019, 103). The mental flexibility provided by analogical thinking allows humans to expand our thinking and imagine solutions to problems we have never faced or contemplated. This will be hugely important as humanity deals with wicked problems. Lateral thinking will create a necessary (and needed) competitive advantage.

Raymond Loewy, a famous industrial designer; a pioneer of design research coined the term "MAYA" - Most Advanced, Yet Acceptable (Dam, 2021). Lowey's design philosophy recognized that any advancements in technology or experience had to have some element grounded in our present reality in order to make sense of it. "The adult public's taste is not necessarily ready to accept the logical solutions to their requirements if the solution implies too vast a departure from what they have been conditioned into accepting as the norm" (Dam, 2021). Understanding the importance of the MAYA principle creates huge opportunities to apply analogical thinking. Knowing that a balance needs to be achieved to push the needle forward on innovation requires a grounding in today's reality and understanding. Analogical thinking is business designers' MAYA. It pushes the designer forward to make sense of the unknown, yet provides the grounding to base the information in current realities.

B. Curiosity Driven Inquiry

Wicked Problems Tackled: 3, 5, 7

As children, we look at the world with fresh eyes and ask end-less numbers of "why" questions. As we grow and mature, we lose that spirit of asking "why". We stop asking "why" out of fear of appearing to be uninformed or unknowing. Losing this ques-tioning spirit is problematic for humans, as it's our greatest innovative tool. It is estimated that the average four-year old British girl asks 390 questions per day; with boys not lagging too far behind (Berger, 2014, 4). Instinctively children are born asking questions, however, humans question-asking peaks at age. "For the rest of her life, that four-year old girl will never ask questions as instinctively, as imaginatively, or as freely as she does at her shining moment." (Berger, 2014, 4). This is problem-atic if humans are to tackle wicked problems.

Questioning and inquiry are the lifeblood of innovation and problem-solving. Without questions and inquiry, there would be no hypothesis and no solutioning. "While problems of all shapes and sizes can benefit from creativity, it has become an article of faith that 'wicked problems', in particular, require highly creative solutions that span boundaries and organizations." (Fabricant, 2013, 148). Curiosity and questioning are critical to human survival, both have at times garnered a bad reputation. Leaders find that curiosity and interest-driven projects can be problem-atic for performance and returns.

It's been proven that curiosity actually increases performance and job satisfaction. "When our curiosity is triggered, we think more deeply and rationally about decisions and come up with more-creative solutions… and develop more-trusting and more-collaborative relationships with colleagues." (Gino, 2018, 83). Given the huge boost provided by curiosity and creativity, it is ponderous why these skills are not flexed more often.

Knowledge, expertise, and answers have a shelf life and lose some of their value over time (Berger, 2014, 23). "Knowledge is a commodity where known answers are everywhere, and easily accessible. Because we're drawing in all of this data. The value of explicit information is dropping." (Berger, 2014, 23). This is not implying that novelty of information is king, however, known knowledge loses value due to it being known and static. Information is able to add to understanding but if not acted on or built upon it starts to lose its relevance.

The good news, business designers can be part of the movement to bring back curiosity, inquiry, and discovery by reigniting the passion for being lifelong learning as adults. "You don't learn unless you question." (Berfer, 2014, 24). Creating opportunities and space to ask "why", "what if", and "how might we…" questions encourage open discovery. This is done by encouraging team members to approach problems with fresh eyes, wonder and interest. "We must try to maintain or rekindle curiosity, sense of wonder, inclination to try new things, and ability to

adapt and absorb that served us so well in childhood." (Berger, 2014, 24).

C. Elegant Simplifier - Leveraging Systems Thinking
Wicked Problems Tackled: 2, 8, 9

The world is volatile, complex, and messy. Problems are not now and will not be simple and straightforward to solve in the future. To grapple with these unknowns will require developing an understanding of both the observable and unobservable forces, functions, actors, and elements at play. "A competent business designer has the capacity to think holistically and integratively, and understand how people, solution components and activities relate to and influence one another within a broader context." (Fraser, 2012, 255).

Enter systems thinking. Systems thinking is "a set of elements or parts that is coherently organized and interconnected in a pattern or structure that produces a characteristic set of behaviours, often classified as its 'function' or 'purpose''." (Meadows, 2008, 188). Systems thinking takes a holistic, eco-system view of solving a problem.

Systems can take many shapes and forms, and systems can be found within systems. "Systems can change, adapt, respond to events, contain nonliving things. Systems can be self-organizing, self-repair over various disruptions. They are resilient, and many are evolutionary. Out of one system other completely new, never-before-imagined systems can arise." (Meadows, 2008, 12). Parts or functions of systems are typically easies to identify because they are tangible things. As systems thinking is used to understand more questions and unknowns start to surface, tools like mapping are helpful to make sense of ideas, forces, and functions. Despite our ability to use mental models and deploy

other models, humans will never be able to control systems. "We can't control systems or figure them out. But we can dance with them! ... All those endeavours require one to stay wide awake, pay close attention, participate flat out, and respond to feed-back." (Meadows, 2008, 170).

In the future, business designers will need to look closely at systems to understand the observable and unobservable actors and actions at play. This will require business designers to stay humble, honest, and open. The difficulty in communicating the nuance will require empathy and compassion.

D. Data Translator - Quantitative and Qualitative Methods
Wicked Problems Tackled: 2, 4, 9

Data -- is a term that is used to mean many things. Data are not necessarily new; paper records and archives are data. Digital data are new. Before data were organized into spreadsheets they were messy and too difficult to access. With advances in computer technology, storage, and analytics data are at our fingertips ready to be manipulated. "Data is changing our world and the way we live and work at an unprecedented rate. Depending on your viewpoint, we're either at the start of something incredibly exciting or we're entering a terrifying Big Brother era" (Marr, 2017, 1).

This paper previously addressed the advances in computational power as a driving force in the movement towards a knowledge economy. Access to this new information provided managers (or flooded them) with possibilities for discovery and new insights.

Analytics transformed those data into dynamic dashboards for rapid diagnostic, and artificial intelligence for uncovering even better insights. Despite all the advances to processing and transforming data, a critical nuance is missing.

Data is only as good and relevant as the questions they are being asked to answer. Therefore, if the questions are not clear or purpose-driven the results and information will lack clarity and direction. The power of data are not the data themselves, it is how you use the data that becomes meaningful and powerful (Marr, 2017, 33). Lateral and analogical thinking will be critical here as different data and models could be applied to problem-solving; generating advantages.

Business designers will also need to recognize that data can be both quantitative and qualitative. Quantitative data is information gathered from point of sale terminals on items sold, or customer details from loyalty and customer programs, or performance of

manufacturing machines in a factory. This information provides trends, patterns, and behaviours. It can inform why sales are increasing or decreasing, but it does not answer the why. Qualitative data is often excellent for exploring the why. For wicked problems or even complex problems understanding the why will provide more depth for solutioning. Qualitative data can be collected through observation and fieldwork. Qualitative data could involve watching shoppers at a grocery store and their patterns of shopping with the purpose of identifying solutions to reduce food waste and obesity. Observation could be helpful at a factory to reduce workplace accidents or productivity.

Data literacy will become increasingly important in modern life. Understanding how and when to leverage quantitative and qualitative data and information will result in the better discovery and eventual hypothesis testing. "As soon as you understand something, you ask a better question. And once you ask that question, you need more data" (Doolittle, 2021, A9). Use data

wisely and the answers they will reveal will hopefully lead to more sustainable outcomes. As business design evolves, the ability of business designers to dig into data and identify questions for discovery will be critically important.

E. Incrementalism and Foresight

Wicked Problems Tackled: 5, 6, 9, 10

Decision-making is an inherently personal and introspective process because it requires the individual to determine (from their perspective) their rationale, criteria, reasons, and assumptions for making the decision. Decision-making is ultimately the act of weighing facts and determining some resolution or path forward. The weight applied to those facts is personal as it is tied to the individual's values and value systems. In group problem-solving, we are unable to know the criteria, viewpoint, bias and assumptions that inform others' decision-making.

This paper introduced in the section on analogical thinking the idea of Systems 1 and 2. System 1 is looking for an easy, automatic response to quickly resolve the problem so the brain can move onto other problems. Depending on the complexity of the problem, System 2 might become involved and a different level of introspection is required.

Knowing that the world is filled with complexity and uncertainty-finding models that offer more transparency and openness in decision making is fundamental for building the knowledge base and solution forward.

In 1959, Charles Lindblom introduced the concept of incrementalism; applying it to public policy and political science issues (Lindblom, 1959). Incrementalism is the act of weighing information and deliberately determining the impact(s) it has on the outcome. It weighs a new piece of information against the existing body of knowledge to make sense of how new information fits within the existing body of knowledge. The impact of the new information can either be positive or negative or increase or decrease the likelihood of an event happening. Incrementalism is helpful because it gradually changes the perception of an event or outcome, and thus is more easily followed and comprehended by the group.

As wicked problems continue to dominate the problems humans attempt to solve, incrementalism is a helpful mental model to leverage the importance or meaning of new information. As new pieces of information are uncovered and require sensemaking it is helpful to think about the addition of the new information in relation to what we currently understand. Incrementalism is a helpful check against internal values and weighting because it is not based on internal values, but on the information as it relates to what we already know.

CONCLUSION

Why do we need Next Generation Business Design?

Business design is a maturing discipline with huge potential to solve wicked problems, and rapidly improve economic, political, social and cultural imbalances. The complexities of modern life will challenge existing thinking and knowledge sources. "We live and work in a world of interlocking systems, where many of the problems we face are dynamic, multifaceted, and inherently human. Think of some of the big questions being asked by businesses, government, educational, and social organizations: How will we navigate the disruptive forces of the day, including technology and globalism? How will we grow and improve in response to rapid change? How can we effectively support individuals while simultaneously changing big systems?" (IDEO, 2021).

As business design evolves as a discipline, we will need business designers who are...

- Curious and interested in the world around them, and are on the lookout for alternative methods for questioning and discovery to uncover new ways forward. To chart unchartered territory. Who uses creativity not solely for aesthetics but for inspiration,

- Able to grapple with disparate ideas from unrelated disciplines and domains that can be applied to new and unknown problems. Who are fearless and gritty in understanding the unknown,

- Motivated and open to incrementalism and collective wisdom as tools for discovery to uncover nuance and depth in human conditions,

- Able to understand and make sense of the observable and unobservable patterns, trends, elements, and influences that impact a 'system' or ecosystem, and

- Well versed in quantitative and qualitative data;

To meaningfully solve these problems will require openness, trust, and interest in exploring new paths forward. Where structure does not exist, models can provide guidance and direction. Business design will provide that structured thinking. The next generation of business designers will leverage analogical thinking, curiosity-driven mental models, systems thinking, data analysis, and incrementalism.

Business design is a tool that assesses business viability, revenue and market potential. Business design will flourish as a boundary-pushing, social innovation conquering machine due to its emphasis on grounding lateral thinking, due to the ability to balance macro and micro level thinking. Business design is the future of problem-solving. It will take perseverance, grit, and relentless focus to overcome these challenges. Believe in the discipline and watch it flourish.

Finally, as a society we will need to create and support organizations that will grant individuals and groups the space to fail and then improve.

GLOSSARY

Analogical Thinking: "Analogical thinking is the practice of recognizing conceptual similarities in multiple domains or scenarios that may seem to have little in common on the surface. It is a powerful tool for solving wicked problems" (Epstein, 2019, 102-103).

Abductive Reasoning: Begins with an incomplete set of facts and/or observations, and proceeds to identify the likeliest possible outcome or explanation.

Business Model: Describes a system of how the pieces of a business fit together. It answers questions about who is the customer, what is the value proposition, how the business will make money, and what is the cost structure. (Magretta, 2002, 2).

Business Design: A way of operating that combines the tools of business thinkers, analysts, and strategists with the methods and mindsets of design. Business designers think about how elements of the business model affect the consumer and client experience.

Business Design - Next Generation: Practitioners who leverage five traits to solve wicked problems. The traits include (1) Analogical Thinking, (2) Curiosity Driven Inquiry, (3) Systems Thinking, (4) Data Translator, and (5) Incrementalism and Foresight.

Design Thinking: Design Thinking is an interactive process, whereby we seek to understand the user's challenges and ultimately redefine the problem in an attempt to identify alternative strategies and solutions (Dam and Siang, 2020). Design Thinking sits at the centre of desirability, viability, and feasibility - creating the design sweet spot.

Mental Models: "Deeply ingrained assumptions, generalizations, or even pictures and images that influence how we understand the world and how we take action" (Senge, 1994).

Strategy: Strategy "Strategy is an integrated set of choices that uniquely position the firm in its industry to create sustainable advantage and superior value relative to competition" (Lafley &

Martin, 2013, 3). Once choices have been made it is then a commitment to achieving and seeing those goals through. "Strategy is a commitment to a set of coherent, mutually reinforcing policies or behaviours aimed at achieving a specific competitive goal." (Pisano, 2015).

Systems Thinking: "A set of elements or parts that is coherently organized and interconnected in a pattern or structure that produces a characteristic set of behaviours, often classified as its 'function' or 'purpose'" (Meadows, 2008, 188).

Wicked Problems: A wicked problem is one that is challenging or impossible to solve due to the many unknowns. Wicked problems occur "when organizations face constant or unprecedented challenges... has innumerable causes, is tough to describe, and doesn't have a right answer " (Camillus, 2008). "Wickedness isn't a degree of difficulty; wicked issues are different because traditional processes can't resolve them" (Camillus, 2008)

REFERENCES

Ackoff, R. L. (1999). *Ackoff's Best.* New York: John Wiley & Sons, pp 170 – 172.

Antonelli, P., Martin, R. L., & Christensen, K. (2013). *Rotman on Design, The Best on Design Thinking from Rotman Magazine.* Canada: University of Toronto Press.

Berger, W. (2014). *A More Beautiful Question: The Power of Inquiry to Spark Breakthrough Ideas.* United States: Bloomsbury.

Bilton, N. (2009, December 9). Part of the Daily American Diet, 34 Giga-bytes of Data. *New York Times.* Retrieved from URL https://www.ny-times.com/2009/12/10/technology/10data.html.

Board of Innovation. (2021). *What is Business Design?* Retrieved from URL https://www.boardofinnovation.com/what-is-business-design/.

Brown, T. (2015, August 27). When Everyone is Doing Design Thinking, Is

It Still a Competitive Advantage? *Harvard Business Review Online.* Retrieved from URL https://hbr.org/2015/08/when-everyone-is-doing-design-thinking-is-it-still-a-competitive-advantage.

Camillus, J. C. (2008, May). Strategy as a Wicked Problem. *Harvard Business Review Online.* Retrieved from URL https://hbr.org/2008/05/strategy-as-a-wicked-problem.

Collis, D.J. & Rukstad, M.G. (2008, April). Can You Say What Your Strategy Is? *Harvard Business Review Online.* Retrieved from URL https://www.wright.edu/sites/www.wright.edu/files/page/attachments/Can-you-say-what-your-strategy-is.pdf.

Cherry, K. (2021, July 30). How Confirmation Bias Works. *Verywell Mind.* Retrieved from URL https://www.verywellmind.com/what-is-a-confirmation-bias-2795024.

Dam, R.F. (2021, February). The MAYA Principle: Design for the Future,

but Balance it with your Users' Present. *Interaction Design Foundation.* Retrieved from URL https://www.interaction-design.org/literature/article/design-for-the-future-but-balance-it-with-your-users-present.

Dam, R.F. and Siang, T.Y. (2020, August). What is Design Thinking and Why is it so Popular? *Interaction Design Foundation.* Retrieved from URL https://www.interaction-design.org/literature/article/what-is-design-thinking-and-why-is-it-so-popular.

Davis, S. and Botkin, J. (1994, September - October). Harvard Business Review Online. Retrieved from URL https://hbr.org/1994/09/the-coming-of-knowledge-based-business.

Doolittle, R. (2021, May 7). Statscan to spend $172-million over five years to improve how it captures data on race, gender, sexual orientation. *The Globe and Mail*, A1, A9.

Dondi, M., Klier, J., Panier, F., and Schubert, J. (2021, June 25). Defining

the skills that citizens will need in the future world of work. McKinsey Public Sector Insights. Retrieved from URL https://www.mckinsey.com/industries/public-and-social-sector/our-insights/defining-the-skills-citizens-will-need-in-the-future-world-of-work.

Dorst, K. (2015). *Frame Innovation: Create new thinking by design.* United States of America: Massachusetts Institute of Technology Book Press.

Epstein, D. (2019). *Range: Why Generalists Triumph in a Specialized World.* United States of America: Riverhead Books.

Fabricant, R. (2013). Mind the Gaps: The Challenges of Using Design to Scale Solutions to Wicked Problems. In R. Martin & K. Christensen (Eds.), *Rotman on Design: The Best on Design Thinking from Rotman Magazine* (pp.146-151). Toronto, ON: University of Toronto Press.

Fraser, H. (2013). Business Design: Becoming a Bilateral Thinker. In R. Martin & K. Christensen (Eds.), *Rotman on Design: The Best on Design Thinking from Rotman Magazine* (pp.251-255). Toronto, ON: University of Toronto Press.

Gino, F. (2018, September-October). The Business Case for Curiosity. *In HBR's 10 Must Reads On Creativity.* (pp.83-98). Boston, MA: Harvard Business Review Press.

Golby-Smith, T. (2013). The Second Road of Thought: How Design Offers Strategy a New Tool Kit. In R. Martin & K. Christensen (Eds.), *Rotman on Design: The Best on Design Thinking from Rotman Magazine* (pp.38-43). Toronto, ON: University of Toronto Press.

Harari, Y.N. (2018, December 8). Yuval Noah Harari on what the year 2050 has in store for humankind. *Wired Magazine.* Retrieved from URL https://www.wired.co.uk/article/yuval-noah-harari-extract-21-lessons-for-the-21st-century.

Horst W. J. Rittel, & Webber, M. (1973). Dilemmas in a General Theory of Planning. *Policy Sciences,* 4(2), 155-169. Retrieved August 21, 2021, from http://www.jstor.org/stable/4531523

IDEO. (2021). Design Thinking Defined. Accessed on August 31st. Retrieved from URL https://designthinking.ideo.com/.
IDEO U. (2021). What is Business Design? Accessed on August 31st. Retrieved from URL https://www.ideou.com/blogs/inspiration/how-to-build-a-better-business-through-design.

Kahneman, D. (2011). *Thinking Fast and Slow.* (Anchor Canada Edition). Canada: Anchor Canada.

Kahneman, D., Sunstein, C.R., and Sibony, O. (2021). Noise. A Flow in Human Judgement. United States of America: Little, Brown Spark.

Lafley, A.G. & Martin, R.L. (2013). *Playing to Win: How Strategy Really Works.* Boston Massachusetts: Harvard Business Review.

Liektka, J. (2015). Perspective: Linking Design Thinking with Innovation Outcomes Through Cognitive Bias Reduction. *Journal of Product Innovation Management, 32(6)*:925-938.

Liedtka, J. & Friedel, R. (2013). Possibility Thinking: Lessons from Breakthrough Engineering. In R. Martin & K. Christensen (Eds.), *Rotman on Design: The Best on Design Thinking from Rotman Magazine* (pp.15-19). Toronto, ON: University of Toronto Press.

Lindblom, C. (1959). The Science of "Muddling Through". Public Administration Review, 19(2), 79-88. doi:10.2307/973677.

Lockwood, T., & Papke, E. (2017). *Innovation by Design: How Any Organization Can Leverage Design Thinking to Produce Change, Drive New Ideas, and Deliver Meaningful Solutions* (First ed.). United States of America: Weiser.

Magretta, J. (2002, May). Why Business Models Matter. *In HBR's 10 Must Reads On Business Model Innovation.* (pp. 1-13). Boston, MA: Harvard

Business Review Press.

Marr, B. (2017). *Data Strategy. How to profit from a world of big data, analytics, and the internet of things.* London, Great Britain: Kogan Page.

Martin, R (2013). The Design of Business. In R. Martin & K. Christensen (Eds.), *Rotman on Design: The Best on Design Thinking from Rotman Magazine* (pp.15-19). Toronto, ON: University of Toronto Press.

Martin, R. (2009). *The Design of Business. Why Design Thinking is the Next Competitive Advantage.* Boston, Massachusetts: Harvard Business Press.

Meadows, D.H., and Wright, D. (2008). *Thinking in Systems. A Primer.* White River Junction, VT: Chelsea Green Publishing.

Moran, K. (2021, August 22). Design Thinking: Study Guide. Nielsen Norman Group. Retrieved from URL https://www.nngroup.com/articles/design-thinking-study-guide/.

Organisation for Economic Co-Operation and Development (OECD). (2021). OECD Future of Education and Skills for 2030 - Conceptual Learning Framework. Retrieved from URL https://www.oecd.org/education/2030-project/teaching-and-learning/learning/skills/Skills_for_2030_concept_note.pdf.

Osterwalder, A., and Pigneur, Y. (2010). *Business Model Generation. A Handbook for Visionaries, Game Changes, and Challengers.* United States of America: Wiley.

Owen, C.L. (2006). Design Thinking: Driving Innovation. *The Business Process Management Institute.* 1-5. Retrieved from URL https://static1.squarespace.com/static/50f1d855e4b0a42e43ebf428/t/56e99592859fd02c9c924c6e/1458148754827/Design-thinking-driving-innovation-owen_desthink06.pdf.

Owen, C. (2007, January). Design Thinking: On its Nature and Use. In R. Martin & K. Christensen (Eds.), *Rotman on Design: The Best on Design Thinking from Rotman Magazine* (pp.45-49). Toronto, ON: University of

Toronto Press.

Oxford Languages. (2021). "Competitive Advantage". Retrieved on August 27, 2021 from URL https://www.google.com/search?q=define+-competitive+advan-tage&rlz=1C1CHBF_enCA818CA818&sxsrf=AOaemvJVaUI585vCEYBjDQTdybPGStcpOA%3A1630166122561&ei=alwqYYfjIfC1ggfUs6nYCg&oq=define+competitive+advantage&gs_lcp=Cgdnd3Mtd2l6EAMyBwgAEEcQsAMyBwgAEEcQsAMyBwgAEEcQsAMyBwgAEEcQsAMyBwgAEEcQsAMyBwgAEEcQsAMyBwgAEEcQsANKBAhBGABQhxFYhxFgjhRoAXACeACAAAQCIAQCSAQCYAQCgAQHIAQjAAQE&sclient=gws-wiz&ved=0ahUKEwiHwKOFitTyAhXwmuAKHdRZCqsQ4dUDCA8&uact=5.

Pisano, G.P. (2015, June). You Need an Innovation Strategy. It's the only way to make sound trade-off decisions and choose the right practices. *Harvard Business Review Online.* Retrieved from URL https://hbr.org/2015/06/you-need-an-innovation-strategy.

Porter, M.E. (1998). Competitive Strategy. Techniques for Analyzing Industries and Competitors. United States of America: The Free Press.

Rittel, H.W.J. & Webber, M.M. (1973). Dilemmas in a General Theory of Planning. *Policy Sciences, 4*(2), 155-169. Retrieved from http://www.jstor.org/stable/4531523.

Senge, P.M. (1992). Mental models, *Planning Review*, Vol. 20 No. 2, pp. 4-44.

Surowiecki, J. (2004). *The Wisdom of Crowds.* United States of America: Anchor Books.

The power of design thinking. (2020, February 13). *McKinsey & Company.* https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/the-power-of-design-thinking

Tetlock, P. E., & Gardner, D. (2015). Superforecasting: *The Art and Science*

of Prediction. United States of America: Signal McClelland & Stewart.

Tuttle, G. (2021, February 24). What is design thinking and why is it important? *WeWork Ideas*. Retrieved from URL https://www.we-work.com/ideas/professional-development/creativ-ity-culture/what-is-design-thinking#why-is-design-thinking-important.

Vossoughi, S. (2013). Deconstructing The Design Thinker. In R. Martin & K. Christensen (Eds.), *Rotman on Design: The Best on Design Thinking from Rotman Magazine* (pp.197-201). Toronto, ON: University of Toronto Press.