Designing the future: strategy, design and the 4th Revolution: an introduction to the special issue

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Innovation is a concept at the forefront of management thinking today. Irrespective of whether a manager works in private industry, the public sector, government or the third sector, they are expected to be able to create, sustain and grow the conditions that enable innovation to happen and flourish. With the relentless obsession for innovation businesses have pursued a large range of tools, methods and processes that allows them to create innovations and to be innovative. Design thinking (DT) has evolved to be one of the fastest growing approaches to innovation across the globe[1]. While there have been attempts to map the origins of DT, its growth has been somewhat organic and tied to the types of products being designed[2], Through its emphasis on human centered design with a strong focus on having empathy for people and their needs and using rapid prototyping to develop and test solutions, DT privileges human and creative practices in the pursuit of innovation[3,4], and can 'release' the 'creative confidence' necessary for innovation[5]. As such, it has emerged as a core capability and mindset for both scholarly as well as pragmatic pursuit of innovation not only across industries, but also in government, public sector, non-for-profit and NGO service and product innovation[6,7,8], in policy making[9], social innovation[10], and military strategy[11]. DT also now dominates how business schools teach how innovation is done, even at the expense of other approaches[12].

While the academic study of design thinking is relatively new[13] its origins are less so. The U.S. military and Boeing have been recorded using the term in relation to innovation in defence. For example, VP of Boeing in the 1940s, W. E. Beall, spoke regarding the creation of the US' Flying Fortress which had a massive influence on the outcome of WWII. He argued "...the United States might not have had this flying fortress at all had it not been for persistent private enterprise. The airplane was developed in 1935 as a private venture culminating in the design knowledge and the **progressive design thinking** which the Boeing organisation had been doing the preceding several years..."[14]. To this end, DT 'by name' is at least 80 years old[15], and was conceived of as something organizations do in order to be innovative. It can be argued with some conviction that DT is not a novel fad, with some claiming DT is not only a fad, but a kind of syphilis[16].

As should be the case, many scholars have attempted to interrogate the foundations of DT in order to give it some concrete structure[17], identify the cognitive styles of DT and thinkers[18],[19], or provide DT with a social learning theory foundation[20], while others have attempted to focus on the impact of DT in innovation[21]. Yet there remains a dearth of literature and research that investigates how DT is being used and practiced in innovation, and what its effects are. Today a plethora of organizations have adopted the design-thinking ethos (at least in rhetoric), and have established roles, departments and even DT services to improve the innovation process and ensure successful adoption by clients and other end-users of innovation. For example, SAP, Google, Siemens, Intel, IBM, Arup, NASA, and the Air Forces in Australia, UK and USA are all engaging in DT. Globally, it is hard to identify a region where DT is not being applied in significant ways, from USA, Canada, India, across Africa, China, Australia, Singapore and much of Europe and the UK and the Middle East.

In the *Academy of Management* and the *Strategic Management Society*, design thinking interest groups and networks have grown exponentially in size and activity over the last few years. Even more obvious is the surge within universities globally, especially business schools, in offering DT courses and executive programs, degrees (including PhDs), and DT master classes and DT research centers and consulting services. With this surge there has been an increase in educational researchers exploring the most ideal and impactful ways to teach DT, especially to business students[22], and the topic is now

included in many successful business school textbooks[23]. Having entered into the business lexicon, there has been a greater emphasis on more strategic thinking around DT in order to promote competitive advantage for organizations[24]. Indeed, for Brown (2015), if organizations cannot integrate and embed DT into their organization, they cannot hope to see a sustainable advantage and benefit from it[25].

Brown's (2015) argument has relevance to strategy, strategy making and strategic practice because unless DT is embedded and tailored to the organization's culture, structures and proto-technologies, its strategic benefits are diminished[26]. Indeed, we argue that DT, or at least some number of its underlying mindsets, skillsets and toolsets, is a strategic imperative in innovation as the world becomes less certain and problems more wicked, even on a personal level[27]. In short, while organizations increasingly must deal with wicked problems in a hypercompetitive and global marketplace, DT can be seen as an important means by which to tackle these wicked problems – so long as its underpinned by critical thinking[28].

Logically the idea of strategy, DT and wicked problems leads us to an underlying motivation and focus of this special issue of *California Management Review*. By far one of the most important ways to make an impact on wicked problems is through technology. From automation to robotics, artificial intelligence to intelligence augmentation, smart materials, bio-nanotechnology, quantum computing and so on, we have seen how the 4th Industrial Revolution (the so-called revolution that comes from technology though AI, and 5G connectivity), and its related Internet of Things, are presented to us as both the savior and destruction of humanity. This revolution impacts all corners of the earth, and all aspects of human interactions, and yet several challenges lie ahead for organizations' and managers' ability to diffuse or commercialize these frontier technologies. The rapid introduction of these technologies demands a human-centered context and counterpoint and that can be found in DT.

This special issue joins the growing body of work exploring the idea of DT and whether DT makes a difference in terms enhancing or augmenting the impact of technology, and as a result innovation, in a positive way. We believe we have chosen an interesting, relevant and useful array of papers that provide different approaches, views and interpretations of applied design thinking. These papers provide both management and scholarly readers with insights in how DT is used, as well as its impact and usefulness in a variety of contexts.

We open the special issue with the article by Appleyard et al., (this issue) who frames DT as dynamic capabilities by offering the idea of 'creative forbearance'. Creative forbearance is offered as a way of navigating the tensions in creativity and implementing innovations that allows for market leadership under complex conditions. An important take away from Appleyard et al's piece is the importance of integrating and morphing DT into the businesses culture and practices.

Knight et al's (this issue) piece opens up a conversation about how DT can inform strategy by considering how corporate managers can bring in customer data into strategic planning. They identify sets of practices that managers can utilize to make design led strategy and consider how such practices can embed DT within the organization's practices. They separate between static types of review and discussion and emphasize active playing with data and props. Rather than solely focusing all onto group work that is typical of DT approaches, they show how the (re-)integration of individual work and reflection is important.

Liedtka (in this issue) is a strong proponent of DT, she argues that the value of DT is as a technology that enables and encourages conversations that break down both social and psychological barriers that free-up the innovation process. Liedtka highlights how DT as a technology works to achieve innovation through practices that are recognizable in the innovation process.

Thompson and Schonthal (this issue) move our attention to the social psychology of DT, as they describe central ideas from DT and use research and theory in social psychology to explain underpinning characteristics of DT process and how it can be effectively utilized within an organization. Indeed, there is immense value in bringing psychology into the study and understanding of DT and social psychology offers much, should, cognitive-behavioral and neuroscience will also advance our understanding.

Bjorklund et al (this issue) explores the tensions among design, engineering and management practices and how these can lead to pitfalls that inhibit or negatively impact the adoption of design thinking. Bjorklund el al's paper should cause us to

question how we often box-in design teams, and more often than not forget that there is a top-down hierarchical culture that can get in the way.

Wrigley et al (this issue) considers how DT can be embedded by illuminating the conditions that enable DT to take hold and to have an impact. Wrigley et al show us how challenging (perhaps almost impossible) it is to integrate DT into the organization. Perhaps a solution may lie in the creation of a temporary design-led organization?

We close the special issue with an epilogue by Sara Beckman who wraps up this special issue with ideas and thoughts in response to the collection of articles and direction of future research on DT. The epilogue takes each paper and does not simply consider them as individual papers but also as conversations that speak to common themes and ideas. When it comes to DT, Beckman reminds us to not accept any idea at face value:

> *"Without more careful unpacking and developing deeper understanding of how organizations frame and solve problems more generally, academics and practitioners alike run the risk of getting too narrowly focused on a single practice and neglecting the others that might rightfully accompany it" Beckman this issue pxx)*

This papers in this special issue offer some practical insights into how DT is, and can be used to solve problems. However, this special issue does not provide answers, rather it raises more questions. DT is not and should not be perceived as the only way to solve strategic innovation problems. As a topic of investigation, and as a practice, DT deserves the attention it is getting, and we expect that the study of DT, the way it is understood, practiced and evaluated will continues to attract scholarly attention for a long time to come. Future research needs to provide greater clarity and evidence for the benefits of DT in practice. DT's impact and applicability should not be overstated but it also should not be underestimated as an approach to solve strategic problems. The challenge for scholars and practitioners alike is to find that 'Goldie Locks'point between the hyperbole and the reality of DT – that point where we can answer where and how DT works and makes sense in pragmatic terms.

 Happy framing and reframing.

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[1] Kolko, J. 2015. Design Thinking Comes of Age. Harvard Business Review. 93(9), pp.66-69.

[2] For example, Barry M. Katz, in his book (2015) *Make it New: The History of Silicon Valley Design.* MIT Press, Cambridge, Ma., describes the organic evolution of DT. However, DT's origins as an idea can also be traced to Stanford's John E. Arnold over 60 years ago: see Thienen, J.V., W.C., C., Corazza, G.E. and Meinel, C. 2017. Theoretical Foundations of Design Thinking Part I: John E. Arnold's Creative Thinking Theories. thisisdesignthinking.net. [Online]. Available from: http://thisisdesignthinking.net/2017/05/theoretical-foundations-of-design-thinking-john-arnold-creative-thinking-theories/ [Accessed 5th Oct 2017].

[3] Brown, T. 2008. Design Thinking. Harvard Business Review. 86(6), pp.84-92.

[4] Brown, T. 2009. Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation. New York: HarperCollins.

[5] Kelley, T., & Kelley D., (2013) *Creative Confidence: Unleashing the Creative Potential Within Us All.* Crown Business: NY.

[6] Amatullo, M.V. 2015. Innovation by Design at Unicef: An Ethnographic Case Study. Management: Designing Sustainable Systems thesis, Case Western Reserve University.

[7] Bason, C. 2010. Leading public sector innovation: co-creating for a better society. Bristol, U.K; Portland, Ore: Policy Press

[8] Jahnke, M. 2009. Innovation through design thinking. University of Gothenberg: Business Design Lab.

[9] Mintrom, M. and Luetjens, J. 2016. Design Thinking in Policy Making Processes: Opportunities and Challenges. Australian Journal of Public Administration. 75(3), pp.391-402.

[10] Brown, T. and Wyatt, J. 2010. Design Thinking for Social Innovation. Stanford Social Innovation Review. [Online]. 8(1),

[11] Cardon, E.C. and Leonard, S. 2012. Unleashing design: planning and the art of battle command. Military Review. 92(4), p29.

[12] Seidel, V. P., Marion, T. J. & Fixson, S. K. (2020) Innovating How to Learn Design Thinking, Making, and Innovation: Incorporating Multiple Modes in Teaching the Innovation Process, Transactions on Education, Vol. 20, No. 2: 73-84.

[13] See for example Richard Buchanan's 1992 article, Wicked Problems in Design Thinking in Design Issues, Vol. 8, No. 2, pp. 5-21. This appears to be one of the earliest academic papers on DT.

[14] Reported in the "Investigation of the national defence program: Hearings before a Special Committee Investigating the National Defence Program, United States Senate, Seventy-Seventh Congress, first session--Eightieth Congress, first session. S. Res. 71." from 1941-1945.

[15] We say, by that name, because to some extent design thinking as set of capabilities and practices has presumably been around as long as designers have been around. The craftsman focus of early manufacturing would have embedded elements of design thinking that were lost as we moved towards mass production. So, it is the term 'design thinking' that is relatively new, not its practice (for a similar discussion see Richard Sennett's *The Craftsman)*.

[16] For example see Lee Vinsel's blog on DT
https://medium.com/@sts_news/design-thinking-is-kind-of-like-syphilis-its-contagious-and-rots-your-brains-842ed078af29

[17] Rowe, P.G. 1987. Design thinking. Cambridge, Mass; London: MIT Press. Elsbach, K. D., & Stigliani, I. (2018). Design Thinking and Organizational Culture: A Review and Framework for Future Research. Journal of Management, 44(6), 2274–2306.

[18] Cross, N. 1982. Designerly Ways of Knowing. Design Studies. 4, pp.221-227.

[19] Brown, 2008 op. cit.

[20] Beckman & Barry, 2007 op. cit.

[21] Schmiedgen, J., Spille, L., Koppen, E., Rhinow, H. and Meinel, C. 2016. Measuring the Impact of Design Thinking. In: Plattner, H., Meinel, C. and Leifer, L ed. Design Thinking Research: Making Design Thinking Foundational. New York: Springer, pp.157-170

[22] Ibid. Seidel, et al 2020; Glen, R., Suciu, C., Baughn, C. C., & Anson, R. Teaching design thinking in business schools, In The International Journal of Management Education, Volume 13, Issue 2, 2015, Pages 182-192,

[23] Clegg, S. R., Kornberger, M., & Pitsis, T. S (2016) Managing and Organizations: Introduction to theory and practice. Sage: Thousand Oak, Ca. see pp. 547-551.

[24] Martin R. L., 2009. The Design of Business: Why Design Thinking is the Next Competitive Advantage. Harvard Business School Press: Mass.

[25] Brown, T. (2015). When Everyone Is Doing Design Thinking, Is It Still a Competitive Advantage? *Harvard Business Review, August*.

[26] See also Roger Martin, 2009, op. cit.

[27] Roth, B. (2015). The achievement habit: Stop wishing, start doing, and take command of your life. NY: HarperCollins:

[28] Buchanan, R. 1992. Wicked Problems in Design Thinking. Design Issues. 8(2), pp.5-21.