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Approaching Change with and in Design

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Abstract

Design practice is intrinsically about change and changing the world.

Over the past two decades several new areas have emerged within design, such as service design, design thinking, speculative design, transition design and social design. What constitutes a desirable design outcome has also evolved. New design processes exist to enable those outcomes, and broader, more diverse communities often contribute to collective changemaking.

Despite this, we still have a fragmented understanding of how to use design to create change, with a limited number of frameworks to guide its implementation in public and private settings. This article provides a brief overview of the recent developments in and through design that relate to how and why the usage of design has changed and how we design change. I look at the products, processes, and people related to change in design, and how design practice has fostered new roles in the field.

In depth interviews with expert designers, and their insights about these roles, have been used to open up the discussion of what questions designers are aiming to define and answer, with whom, and how.

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<https://doi.org/10.1016/j.sheji.2020.08.004>

- 1 Otto Scharmer, *Theory U: Leading from the Future as It Emerges* (San Francisco, CA: Berrett-Koehler Publishers, 2009), 5.
- 2 Abhijit V. Banerjee and Esther Duflo, *Good Economics for Hard Times: Better Answers to Our Biggest Problems* (New York: PublicAffairs, 2019).
- 3 Yuval Noah Harari, *Homo Sapiens: A Brief History of Humankind* (New York: Harper Publications, 2014); Yuval Noah Harari, *Homo Deus: A Brief History of Tomorrow* (London: Harvill Secker, 2016).
- 4 Steven Pinker, *Enlightenment Now: The Case for Reason, Science, Humanism, and Progress* (New York: Penguin Books, 2018).
- 5 Herbert A. Simon, *The Sciences of the Artificial*, 3rd ed. (Cambridge, MA: The MIT Press, 1996), 111.
- 6 Kristina Niedderer, Stephen Clune, and Geke Ludden, eds., *Design for Behaviour Change: Theories and Practices of Designing for Change* (Oxon, UK: Routledge, 2018), 4.
- 7 Nigel Cross, "Design Research: A Disciplined Conversation," *Design Issues* 15, no 2. (1999): 5–10, DOI: <https://doi.org/10.2307/1511837>.

Introduction

Crisis and large societal challenges, such as climate change, poverty, and population growth, can be met by three types of reaction. Retromovement activists will want a return to the past. Defenders of the status quo will want to keep doing more of the same. And advocates of individual and collective transformational change will seek out ways to break patterns and tune in to future possibilities.¹ Otto Scharmer, for example, says the current global shift is a shift of the third kind, involving leadership within every sector of social activity. Researchers in economics, management, and the social sciences are actively exploring ways to break past patterns in their domains and tune in to future possibilities. Bestsellers, including Abhijit V. Banerjee's and Esther Duflo's *Good Economics for Hard Times*, *Better Answers to Our Biggest Problems*,² Yuval Harari's *Homo Sapiens* and *Homo Deus*,³ and Steven Pinker's *Enlightenment Now*⁴ have helped widen the scope of discussion about societal change beyond a single, specific academic realm.

Given the trans-disciplinary nature of today's challenges, it is interesting to consider how the field of design has approached change recently, and if this has altered the role(s) designers play in organizations. In design, change is often represented as the core driver of design activity. Herbert Simon wrote in 1969 that everybody designs who devises courses of action aimed at changing existing situations into preferred ones.⁵ To design is to seek change. Even if this is true, that simple question—How has the contemporary role of the designer changed, given what we know about the nature of today's societal challenges?—clearly does not have a simple answer.

Kristina Niedderer says that our current understanding of how to intentionally use design to create change is fragmented, and that there are only limited frameworks for its effective implementation in professional and public contexts.⁶ The practice has also changed, with an expansion of areas, methods, and approaches. To establish an adequate overview of the recent developments in and through design that relate to how designing changes, and how we aim to foster change, a far-reaching literature review is called for—one far broader than what is possible within the confines of a short article. In design practice, new roles for designers continue to emerge. And the nature of these roles remains, for the most part, vague and ill-defined.

Nigel Cross suggests that if we want to look for design knowledge, we should look into three sources; people, processes, and products.⁷ I adopted his hypothesis, loosely, to identify some common threads in the current design literature. First I looked at the changing object of design, then at how the design process is articulated and used to generate change, and finally at the changes in human design capability in terms of how we design, for whom, and why.

This article reports on these investigations.

The process of discerning these common threads soon raised a more practical question: Are any of these theories being used in practice? How do the practitioners perceive their work, as it relates to these changes? What kind of roles are currently forming for designers in their experience?

The first round of my investigations involved interviewing six designers, all of whom had identified themselves as working with these changes;

- 8 Victor Margolin, *The Politics of the Artificial: Essays on Design and Design Studies* (Chicago: The University of Chicago Press, 2002).
- 9 *Ibid.*, 38–59.
- 10 John Dewey, *Art as Experience*, repr. ed. (New York: Pedigree Books, 1980).
- 11 Margolin, *The Politics of the Artificial*, 52.
- 12 See Elizabeth Rosenzweig, *Successful User Experience: Strategy and Roadmaps* (Waltham, MA: Morgan Kaufmann, Elsevier, 2015); Francesco Pucillo and Gaetano Cascini, "A Framework for User Experience, Needs and Affordances," *Design Studies* 35, no. 2 (2014), 160–79, DOI: <https://doi.org/10.1016/j.destud.2013.10.001>.
- 13 Guy Julier, *Economies of Design* (London: Sage Publications, 2017), 5.

some several times. I used the semi-structured interviews, and the directly transcribed responses of the participants, as a starting point. How did they perceive any changes they had noticed in their work, roles, and practices? Did what they say relate to the existing theories?

While grouping their thoughts and linking them to the existing theoretical frameworks, I performed an additional 16 semi-structured interviews with a separate cohort of 11 designers around these topics. Although these interviews were structured in the same way as the previous ones and transcribed, they were not used for direct verbal accounts; they served more as a backdrop to validate the initial ones. The broader diversity in their opinions helped to expand the field of inquiry, and flesh out some of the issues under debate. This is still a very limited number of interviewees, granted, and hence these findings most likely only cover a certain portion of the entire range of possible approaches. This article is, therefore, more of a starting point for further discussion; it expresses my viewpoint, supported by a selection of quotes from practitioners, and proposes routes for future investigation. It may even serve as the first step towards mapping prevailing theories to practices, or as a springboard for new questions about the novel roles and practices that are forming around design.

Products — How Has What We Design Changed?

In 2002, late professor Victor Margolin published his anthology titled *The Politics of the Artificial*, looking back at design at the end of the previous millennium and posing questions about the decades to come.⁸ Many of the ideas that he suggested two decades ago, or presented as pioneering activities, have since been covered in anthologies, histories, and readers. New approaches to the digital, sustainability, and large-scale transformation are increasingly altering the landscapes of our societies, and changing what and how we design.

From Material to Immaterial

In his 2002 anthology, Margolin opens up the question of products experience.⁹ He draws on the work of John Dewey, and his seminal *Art as Experience*,¹⁰ to explore what “interaction” means, and the relationship between an individual and their environment that results in an experience. He calls for a theoretical model that can help us use the power of collective experiments to create more satisfying products.¹¹

Rapid digitalization turned many of what were “new” design practices and specializations decades ago into activities that are nearly impossible to divorce from design discourse in this day and age. Any device that has a display has content that must be designed; any piece of software or app must also be designed. User Interface Design (UI) had become a well-established field of design by the late nineties, and it soon expanded into User Experience Design (UX), which covers a broader approach than only designing a screen interface.¹² From around 2000, a new specialization of “service design” was emerging. The rise of service design may partly be a response to the growth of the service sector in post-industrial economies.¹³

- 14 On the different roles within game design, see for example Briar Lee Mitchell, *Game Design Essentials* (Indianapolis, IN: Wiley, 2012).
- 15 Daniel L. King et al., "Unfair Play? Video Games as Exploitative Monetized Services: An Examination of Game Patents from a Consumer Protection Perspective," *Computers in Human Behavior* 101 (December, 2019): 131–43, DOI: <https://doi.org/10.1016/j.chb.2019.07.017>.
- 16 Anna Nicolaou, "Fame and 'Fortnite' — Inside the Global Gaming Phenomenon," *Financial Times*, August 2, 2019, <https://www.ft.com/content/f2103e72-b38f-11e9-bec9-fdcab53d6959>.
- 17 See for example Andrew Webster, "Travis Scott's First Fortnite Concert Was Surreal and Spectacular," *The Verge*, accessed November 12, 2020, <https://www.theverge.com/2020/4/23/21233637/travis-scott-fortnite-concert-astronomical-live-report>.
- 18 Heli Salomaa, interviewed January 16, 2020.
- 19 Adrian Forty, *Objects of Desire: Design and Society since 1750*, repr. ed. (New York: Thames and Hudson, 2010), 13.
- 20 Beatriz Colomina and Mark Wigley, *Are We Human? Notes on an Archaeology of Design* (Zürich: Switzerland, 2016).

The rapid change of technology did not only bring on the era of digital services — it also paved the way towards entirely new sectors of activity. A good example is the gaming industry, which today is one of the most rapidly growing industries. It has created new design-related roles, including game designer, level designer, interface designer, world builder, modeler, character designer, and so on.¹⁴ Many earlier business models are changing as the industry expands. Micro-purchases are available during game play, for example; and because games are increasingly a means of self-expression, the ways people can tailor their digital representations and their characters have multiplied.¹⁵ In the late 2010s, games such as Fortnite saw massive commercial success; Fortnite alone had more than 250 million users around the globe on its platform in 2019.¹⁶ Gaming platforms have become channels for experience distribution, with the coolest musicians, vloggers and DJs hosting gigs in these virtual environments.¹⁷

The players' identities in games such as Fortnite are largely established by selecting their "skins" — physical appearance, characteristics, weapons, and so on — for purchase. At first glance, a skin comes across, deceptively, as just a set of fashion options: you buy new clothing for your character, albeit digital. Heli Salomaa is a costume designer who works within the gaming industry. At gaming company Remedy, her role was to develop characters for games by designing the clothing they wear. Her work starts with character analysis, researching and mood boards, and finishes with a digital model of the clothing for the character. The digital end product, and the process to design it, is very similar to costume design in a theatre production. The changes to her role have been more in terms of how the work is performed: the characters are produced in multidisciplinary teams and with new sets of tools. When Salomaa is asked for her title, she says that the field is still developing and that there aren't any fixed titles, or that fields are merging, but that she has used titles such as virtual costume designer, digital costume designer, or simply character artist. The very hands-on design of creating a costume is combined with a broader thought process of creating the depth of the character, focusing on distilling the deeper aspects of humanity into it.

"Some game companies and some costume artists are only thinking about, they try to create characters that look cool. And that is only based on aesthetic features. And it's missing the depth of the character."¹⁸

Digitalization has fostered the emergence of entirely new design roles where the design work is similar to what is executed in the physical world, but the result is digital. The result is also immaterial in another sense — it is not just a (digital) product, but more profoundly, the end result of design is a human emotion, character, or identity.

Expressing who you are through the clothes you buy, even if they are digital, is very much aligned with Adrian Forty's notion that our designed objects are used for consumers craving to express their sense of individuality.¹⁹ Beatriz Colomina and Mark Wigley²⁰ look at this human need to express ourselves in their book *Are We Human?* and state that we now not only communicate and collaborate with wider and wider groups through multiple channels, we also refashion ourselves through the endless generation of

- 21 John Sinclair, *Advertising, the Media and Globalisation: A World in Motion* (New York: Routledge, 2012).
- 22 Colomina and Wigley, *Are We Human*, 273.
- 23 *Ibid.*, 12.
- 24 *Ibid.*, 232.

images, videos, comments, posts and “like’s” we publish. Perhaps the most important transformation in social, cultural, and economic life since the year 2000 has been the arrival of social media and, with it, the ubiquitous surveillance culture. Colomina and Wigley see it as a revolution in our capacity to be human *and* inhuman.

In today’s culture, there is immense cultivation of the sense of self; the ultimate goal is often for a design (or a picture, a meme, a video) to go viral. John Sinclair talks about the empowerment-exploitation paradox.²¹ Not only is social media a tool for self-design, self-design has itself become media. Colomina and Wigley remind us that all these acts of personal design are also integrated into invisible transnational systems. The mobile phone locates us in physical, personal, social, professional, and ideological space. As many of these systems are market-driven, the mobile phone tends to reinforce existing norms and inequalities.²² The challenge and the opportunities of Artificial Intelligence (AI) and the future of work, are a discussion and an ethical debate societies are only just embarking on.

From Objects to Systems

In addition to the immaterial developments, the material world has also changed. There is hardly any dimension of the human world that has not been affected by human activity, with the Earth’s surface massively transformed through agriculture and urbanization. Colomina and Wigley state that contemporary designs that affect human life are not just the cultural and technical artifacts that eventually make their way to museums, but also the precarious movements of refugees, the collapse of biodiversity, the global flows on information and resources, the holes in the ozone layer, and many more similar.²³

Many of the most novel developments within the material world are also hidden, or too tiny for the eye to see. We alter our own body, we wear glasses or take tattoos or drugs, and we also routinely replace parts on the inside of the body. Body parts like bones or joints can be replaced, and new kinds of tissues—a new nose, for instance—can be transplanted, 3d-printed out of biomaterial, or grown.

Lately, the discussion around bio design has increased thanks to the emergence of new tools such as CRISPR, which enables us to make precise insertions and deletions in human DNA sequences. We no longer merely alter existing bodies, we can intentionally design new life forms within a genetically engineered environment. Although experiments like cross-species construction are currently beyond the ethical barriers of most countries, the boundaries have been stretched, albeit illegally, with emergence of practices that alter babies’ DNA.²⁴

Our understanding of the human body is also changing. We now know that the body is inhabited and constituted by thousands of microbes, many of which have existed for millions of years and have evolved in parallel with our species. Each person has a different mix of microbes and the mix keeps changing during a lifetime. The microbiome project that tries to map this vast interspecies complex has changed our human self-image. Should human-centered design perhaps be centered on our entire microbiome? Or focus

- 25 Marco Steinberg, interviewed October 7, 2019.
- 26 Richard Buchanan, "Worlds in the Making: Design, Management, and the Reform of Organizational Culture," *She Ji: The Journal of Design, Economics, and Innovation* 1, no. 1 (2015): 8, DOI: <https://doi.org/10.1016/j.sheji.2015.09.003>.
- 27 *Ibid.*, 11.

on designing systems or organizations rather than any individual species, object, or service?

Part of this discussion involves adopting a wider, systemic approach to what ought to be designed or changed. Marco Steinberg has been working on large-scale transformation projects with municipalities and nations, as well as other public and private partners, for many years. He describes this shift from product to system in one of his early projects within healthcare at Harvard. In it, he recognizes the existence of complex problems and their interdependencies, and situates them in a broader context.

"Can you design us a patient bed that can lock with these three devices? Well, we quickly, looking at the issue, realized that this was not a design problem. It's not like they weren't brilliant enough designers to solve this problem [of designing a better bed]. It was basically a business problem; it was a strategy problem. There were very little incentives for manufacturers of devices to come up with standards that would make their device compatible with others. But it was a much more fundamental question. It was that those processes were not aligned with the logic of how an organization like a hospital works, around culture, around reimbursements, around prevention and acute treatment, and so you begin to sketch out a very large systems problem. And so yes, we could have tried to improve the bed problem. But focusing just on the bed would have made the wrong solution, just more pleasant, so to speak, or faster. What we actually had to do was to rethink the whole system.

"We began to have a hunch that we're answering the wrong question. And that it wasn't a question of efficiency to treatment, but of efficacy of treatments. And we were afraid that the system was trying to take the wrong solution and just make it more efficient. So we made the argument, which our funders bought, that this required a complete redesign. And this was not a medical problem, was not a clinical problem, was not a business problem, was not a policy problem. It's not a reimbursement problem, was not an organizational problem. You can imagine were I'm going, the list is very long, but it's a problem that sits at the intersection of that. And hence, this was by definition a design problem."²⁵

One way to contend with the emergence of today's complex and interconnected challenges is to design new kinds of organizations. Richard Buchanan suggests that the focus of designed cannot be restricted to products or services. Design must also focus on the organizations that deliver products and services.²⁶ He says that the design professions have evolved "from graphic and industrial design to interaction design and, then, to the design of systems, environments, and organizations."²⁷ Steinberg exemplifies this in his work.

"Whether it's the UN or governments across the world, increasingly, these governments and organizations are asked to deal with very complex challenges that are highly ambiguous and fluid, and deeply interconnected. And they're responding to this class of problem with organizations that are highly hierarchical, fragmented, and work in very linear matters. So the tool, the logic of the organization, is not matched to the logic, the issue that they're trying to deal with. So my basic position would be that making the organization more efficient, from a kind of financial perspective, or from a staffing numbers perspective, it's not going to fundamentally change things. You're still going to be

- 28 Marco Steinberg, interviewed October 7, 2019.
- 29 Donald Schön, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983); Donald Schön, *Educating the Reflective Practitioner: Toward a New Design For Teaching and Learning in the Professions* (San Francisco, CA: Jossey-Bass Publishers, 1987).
- 30 Bryan Lawson, *How Designers Think: The Design Process Demystified* (New York: Routledge, 1980).
- 31 Nigel Cross, *Designerly Ways of Knowing* (Basel: Birkhäuser, 2007).
- 32 Tim Brown, *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation* (New York: Harper Collins, 2009).
- 33 Roger Martin, *The Design of Business: Why Design Thinking Is the Next Competitive Advantage* (Cambridge, MA: Harvard Business Press, 2009).
- 34 Lucy Kimbell, "Rethinking Design Thinking: Part I," *Journal of Design and Culture* 3, no. 3 (2011): 293, DOI: <https://doi.org/10.2752/175470811X13071166525216>.
- 35 See Tim Brown's frequently cited article: Tim Brown, "Design Thinking," *Harvard Business Review* (June 2008): 84–92, <https://hbr.org/2008/06/design-thinking>.
- 36 Ulla Johansson-Sköldberg, Jill Woodilla, and Mehves Çetinkaya, "Design Thinking: Past, Present and Possible Futures," *Creativity and Innovation Management* 22, no. 2 (2013): 121–45, DOI: <https://doi.org/10.1111/caim.12023>.
- 37 Kimbell, "Rethinking Design Thinking: Part I," 288.
- 38 Peter Lloyd, "You Make It and You Try It Out: Seeds of Design Discipline Futures," *Design Studies* 65 (November 2019): 174–75, DOI: <https://doi.org/10.1016/j.destud.2019.10.008>.
- 39 Guy Julier and Lucy Kimbell, "Keeping the System Going: Social Design and the Reproduction of Inequalities in Neoliberal Times," *Design Issues* 35, no. 4 (2019): 18, DOI: https://doi.org/10.1162/desi_a_00560.

using the wrong tool, and maybe a smaller tool, to the problem. And so we need to begin to create organizations that are capable of working with that logic, which means that our organizations are team-based, that are cross-functional teams, that are focused, not on administrating current, and improving administration of current kinds of solutions, but are becoming increasingly good at creating completely new kinds of solutions. For questions that didn't exist a while back. And this is a highly integrated and creative endeavor."²⁸

Since there is both the quest to create completely new approaches to issues that didn't seem to exist a while back, and the desire to identify new questions entirely, design and designers are looking less at the product that the design activity creates and more to the process of designing itself.

Process — How Do We Design Change?

Designing change, and the design process, has been an object of study for many decades. Donald Schön first described the reflective practitioner in 1983, and considered ways to educate the reflective practitioner in 1987.²⁹ Bryan Lawson's *How Designers Think: The Design Process Demystified* was first published in 1980,³⁰ and *Designerly Ways of Knowing* by Nigel Cross in 2007.³¹

From "Design Thinking" to Strategy and Futuring

In the early 2000s, the design process was broadly packaged and popularized as the notion of "design thinking," largely through the publication and widespread adoption of two books: Tim Brown's *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation*³² and Roger Martin's *The Design of Business: Why Design Thinking is the Next Competitive Advantage*.³³

Lucy Kimbell³⁴ found that during the five years prior to 2011, the term design thinking became more and more ubiquitous.³⁵ Ulla Johansson-Sköldberg and her colleagues distinguish two uses for design thinking: designerly thinking, and design thinking, where design practice and competence are used beyond the design context (including art and architecture), for and with people without a scholarly background in design, particularly in management. "Design thinking' then becomes a simplified version of 'designerly thinking' or a way of describing a designer's methods that is integrated into an academic or practical management discourse."³⁶ Kimbell³⁷ reminds us that even upon cursory inspection, just what design thinking is supposed to be is not well understood, either by the public or by those who claim to practice it. Decoupled from any one field or discipline of design, the notion of design thinking is meant to encompass everything good about designerly practices.

Despite critiques of what design thinking is, the notion is one of few from the design that has been adopted outside the discipline, across the world, in all kinds of contexts.³⁸ The wave of using design thinking has birthed a new material culture of practices using sticky notes, clay models, and mock-ups constructed out of cardboard, Lego, string, and adhesive putty.³⁹ In many organizations, more focus is being placed on (design) process, and designerly ways of working have been introduced. Human-centered and exploratory

- 40 Barry M. Katz, *Make It New: The History of Silicon Valley Design* (Cambridge, MA: MIT Press, 2015).
- 41 Donald A. Norman, *The Design of Future Things* (New York: Basic Books, 2007).
- 42 Tony Fry, *Design Futuring: Sustainability, Ethics and Practice* (Bloomsbury Visual Arts, 2009). A concise history of the broader approaches to designing futures can be found for example in Mette Gislev Kjærsgaard et al., "Introduction: Design Anthropological Futures," in *Design Anthropological Futures*, ed. Rachel C. Smith et al. (London: Bloomsbury Publishing, 2016), 1–18.
- 43 Klaus Krippendorff, "Design Research, an Oxymoron?" in *Design Research Now*, ed. Ralf Michel (Basel: Birkhauser, 2007), 71, https://link.springer.com/chapter/10.1007/978-3-7643-8472-2_5.
- 44 Harold G. Nelson and Erik Stolterman, *The Design Way: Intentional Change in an Unpredictable World — Foundations and Fundamentals of Design Competence* (Cambridge, MA: MIT Press, 2012), 12.
- 45 Ramia Mazé, "Design and the Future: Temporal Politics of 'Making a Difference,'" in *Design Anthropological Futures*, ed. Rachel C. Smith et al. (London: Bloomsbury Publishing, 2016), 37.
- 46 Nelson and Stolterman, *The Design Way*, 12.
- 47 See for example "32 Corporate Innovation Labs in Retail," *CB insights*, January 7, 2019, <https://staging.cbinsights.com/research/retail-corporate-innovation-labs/>.

approaches are embodied in practices such as workshopping, brainstorming, and probing. Design approaches are now influencing organizations on a strategic level, outside of product development, and a number of organizations have become more design-driven.

Barry Katz, in his review of design in the Silicon Valley, reminds us that many of today's most powerful organizations—Facebook, Google, Amazon, Uber, and Airbnb, for example—are using an end-user driven approach.⁴⁰ Design practitioners working in organizations large and small are no longer only using it to create better products and services—they are using it to transform the organizations entirely, including the mindsets of the people who populate them.

At the same time as the popularization of the design process in business as an operational approach, and design thinking as a mindset, designers and design researchers were increasingly talking about using the design process to design our future. Donald A. Norman wrote *The Design of Future Things* in 2007,⁴¹ and Tony Fry penned *Design Futuring* in 2009.⁴²

In 2007, Klaus Krippendorff suggested that human-centered design is defined by five activities: conceiving possible futures that could not come about without human effort, ascertaining their desirability, experimenting, working out realistic pathways to achieving goals, and getting stakeholders on board with implementation.⁴³

Harold Nelson and Erik Stolterman see design as the ability to imagine that-which-does-not-yet-exist, to make it appear in concrete form as a new, purposeful addition to the real world.⁴⁴

With this approach comes the question of what we want the future to be. Ramia Mazé noted that as design takes part in giving form to the future—possible, preferred futures—we need new and critical ways of relating to issues of futurity. Asking "How *might* things be different?" raises myriad cultural, ethical, and political questions. Our field must address these questions consciously, as we aspire and/or claim to "make a difference" and go about changing existing situations into preferred ones. We cannot entirely know or control the future, but this does not give license to leave behind questions of norms, morals, and politics.⁴⁵ Krippendorff's apparently straightforward quest for designers to understand how desirable these futures are, had, a decade later, become a lot less straightforward.

Design, the ability to imagine that-which-does-not-yet-exist, to use Stolterman and Nelson's term,⁴⁶ happens within many different types of organizational configuration. In large technology companies, designing is mostly the design of products and services. The most cutting-edge large companies now also have internal strategic design groups, and quite a few also have separate, strategic, in-house experimental design studios or think tanks.⁴⁷ Some, like Apple, are notoriously secretive about how they structure operations, others are willing to share a little bit more.

At Google, and mother company Alphabet, there are several such groups, each with a slightly different approach. What's common to all of them is that they see design as a strategic way of revealing what could be.

One of these groups within Google is the Seed Studio, a strategic design and innovation studio within Google Hardware design. If a business unit

- 48 Google Design, "Rehearsing the Future," accessed November 12, 2020, <https://design.google/library/rehearse-the-future/>.
- 49 Philip Battin, interviewed October 31, 2019.
- 50 Reviews and descriptions on the exhibition can be found at Mark Wilson, "Google Looks at the Mysterious Ways Design Influences How You Feel," *FastCompany*, March 25, 2019, <https://www.fastcompany.com/90323347/>; Avantika Shankar, "Salone de Mobile 2019: Google's Presentation Explored the Psychology of Design," *Architectural Digest*, May 7, 2019, <https://www.architecturaldigest.in/content/salone-del-mobile-2019-googles-presentation-explored-the-psychology-of-design/#s-cust0>; Josh Robin, "Google's 'A Space for Being' at Milan Design Week," *Cool Hunting*, April 8, 2019, <https://coolhunting.com/design/googles-a-space-for-being-at-milan-design-week/>; Google, "Google at 2019 Milan Design Week: A Space for Being," YouTube video, 3:27, June 20, 2019, <https://www.youtube.com/watch?v=4iA0srflru0>. "Neuroaesthetic experience" is a term that has been used broadly (and not invented by Google), see for example Anjan Chatterjee and Oshin Vartanian, "Neuroaesthetics," *Trends in Cognitive Sciences* 18, no. 7 (2014): 370–75, DOI: <https://doi.org/10.1016/j.tics.2014.03.003>, or Marcos Nadal and Martin Skov, eds., "Neuroaesthetics: Cognition and Neurobiology of Aesthetic Experience," Special Issue, *Psychology of Aesthetics, Creativity, and Arts* 7, no. 1 (2013): 1–12, available at <https://psycnet.apa.org/PsycARTICLES/journal/aca/7/1>.
- 51 Golden Krishna, interviewed October 31, 2019.
- 52 X company, see <https://x.company>; also see *The Atlantic*: <https://www.theatlantic.com/magazine/archive/2017/11/x-google-moonshot-factory/540648/>.

has low visibility into the future and a limited roadmap, they might not have resources for exploring further ahead. Hence the group uses design to envision futures that could be made at Google. Sometimes there is already a future Product Manager (PM) with an idea of something that could become a product (or a service), and the group helps in articulating and showing what this product could be. They help the PM to pitch for his idea to higher levels of management. Alternatively, a broader area of future interest can be identified, and the group sets out to explore what could be within this potential space. In their presentations the Seed Studio define their work as "Rehearsing the future to inform the present."⁴⁸

In addition to the internal work, occasionally the group also works with a broader external engagement around a current topic. They call these special projects. Design Manager Philip Battin, who heads the group, describes this approach:

"We do strategic design projects, but we also do special projects. So those projects are bit more like things that fall between other things that the organization is doing normally. One example is, like we did in Milan this year, we did this exhibition on how design impacts your biology. Or how you're feeling inside.... We didn't just want to show up and show our products that are for sale. We wanted to start a discourse about something within the design domain, that's interesting for the people out there."⁴⁹

The exhibition *A Space for Being: Exploring Design's Impact on Our Biology* was shown at the Milan Mobile Fair in 2019. Seed Studio worked with a group of neuroscientists to create what they called a neuroaesthetic experience.⁵⁰

Another strategic design group within Google is situated within the strategy unit of Platforms and Ecosystems. It is headed by Golden Krishna, who has named the group The Bird Dogs, because they "go and chase opportunities." The designers talk about helping the organisations to pivot—to embrace a larger change in their focus. The design group works in collaboration with other units, such as the Business Strategy Team, approaching the same challenges with designerly means.

"They [the Business Strategy Team] generally do the same thing we do. They show the opportunities for the next few years. But they do it financially. And so the dream of us going over there is we say, here's some really interesting product ideas.... And then we have this one ... almost like an irrational emotional pitch.... And then a rational, numerical sheet, that's like their pitch [in Business Strategy]."⁵¹

Another group with a strategic approach to design is X—formerly Google X—which is a part of Alphabet. X calls itself the Moonshot Factory.⁵² They want to invent the organizations that could be the Googles of the future. They look at the big challenges, such as climate, energy, and food, and then start building an idea, hypothesis, or concept for some kind of solution.

The X Design group is defined as a central department within X, similar to Strategy or Legal. They work on any and all projects within X, and as a project matures and gets closer to implementation, they also help

53 Nick Foster, interviewed October 31, 2019.

54 Ibid.

55 Anthony Dunne and Fiona Raby, *Speculative Everything: Design, Fiction, and Social Dreaming* (Cambridge, MA: MIT Press, 2013), 11.

56 For more information, see <http://nearfuturelaboratory.com>.

stakeholders ramp up their design capabilities. Nick Foster leads the Design group at X. Part of their work is providing internal projects with design services, similar to that of many other in-house design units, or studios.

“It could be any number of things. If we see that they’re struggling to figure out whether it’s a hat or a coat or a thing you’re injecting in yourself, we can help do some industrial design and some inspiration around that. Or if they have a hypothesis that it’s, it’s going to be useful for certain people in certain ways we can deploy my researchers on that project and say, ‘Right, we’ll go and talk to some of these people,’ you know, do some classic ethnographic research or talk to, phone interview the top 50 experts in that field and compile a document that gives them evidence to say, ‘Yes, you’re right,’ or ‘No, you’re wrong.’ So it’s basically on a needs basis; we look at the project as a whole, see what we think are the weaknesses in it—or the opportunities to push it and give them some speed—and then just deploy the appropriate [design] services for that.”⁵³

Although the design service approach might seem traditional, the concepts are created to start a thought process about potential futures, not to create products to be shipped or sold in stores. Part of this approach to changing the future is using design in a more discursive way.

“Well, new design approaches, so things like design fiction, speculative design, critical design. Using design as a tool to develop thinking as opposed to products is what I’m basically talking about. The whole field of speculative design is what I’m interested in.”⁵⁴

From a Probable Future to Speculative Design

Many early design approaches were used to imagine a specific future or create desirable futures with realistic execution plans for how to get there. Later design approaches have been more open, or at least not overtly positivistic about generating one future solution to strive for. Now design practice has increasingly been used in a more speculative, critical, and radical way to spur discussion. We no longer seek only to create the vision of a desired future, but also seek to provoke or elicit conversations on topics we consider important for debate.

Anthony Dunne and Fiona Raby were among the first to formalize the domain of speculative design. Dunne and Raby themselves list several fore-runners for their approach: critical design, design fiction, design futures, antidesign, radical design, interrogative design, design for debate, and so on.⁵⁵ They say that they are designing for how things could be, not necessarily how they should be.

At Alphabet, they have an internal speculative design community with regular meetups. Employees are also encouraged to engage in activities outside the company, be they academic or experimental. In addition to the work he does at X, Nick Foster is a partner in The Near Future Lab,⁵⁶ a thinking, making, design, development, and research practice focused on design fiction and speculative design.

“It’s design to help people feel like they’re grounded in a future that is yet to come. So they can feel things about it, and therefore have opinions about it,

- 57 Nick Foster, interviewed October 31, 2019.
- 58 For showing gender-related skewing, see for example Karin Ehrnberger et al., "The Androchair: Performing Gynaecology through the Practice of Gender Critical Design," *The Design Journal* 20, no. 2 (2017): 181–98, DOI: <https://doi.org/10.1080/14606925.2016.1261510>. They look at women's experiences during a gynaecological examination, and how the examination is done in a contemporary gynaecological examination chair. Many of the women in the study felt that this procedure was embarrassing and felt exposed. They make these experiences critically visible through the design of a male version; the design of an Andochair, a speculative product that could be used in examining male genitals in for example prostate cancer, renegotiating power and renegotiating experience. Proposing the Andochair as a discussion object made the audience question their preconceptions and become a source of self-reflection.
- 59 Victor J. Papanek, *Design for the Real World: Human Ecology and Social Change* (1969; New York: Pantheon Books, 1971).
- 60 R. Buckminster Fuller, *Operating Manual for Spaceship Earth* (Zürich, Switzerland: Lars Muller Publishers, New Edition 2008).
- 61 Fabrizio Ceschin and Idil Gaziulusoy, eds., introduction to *Design for Sustainability: A Multi-level Framework from Products to Socio-technical Systems* (Oxon, UK: Routledge, 2020), i.

that you can't get ... if you just read a text, or get told about something. Embodying it in something, that's a big part of design fiction.

"We believe in archetypes. So instead of saying, 'Imagine a world where the atmosphere is 10% worse than it is today' ... like, okay, but then if you sort of design a new pizza menu that exists in that world, which is like ... for some reason, all the ingredients have changed because of the new atmospheric conditions. And suddenly, meat is very expensive, because it's expensive to rear cattle. And you can just naturally make the thing [the speculative pizza menu] ... lay it in front of somebody, and say, 'This is the world in which you live now, how does this affect the project you're working on?' I think those kinds of tools are really useful here.

"Speculative design is basically implications, not applications, so: thinking about the implications of something as opposed to how you might use the technology to change the world."⁵⁷

Project leaders may be very excited about their (sometimes even utopian) solutions. The designers see their role as providing a more balanced set of questions to answer before the solution emerges. The positive questions aiming to improve the solution can be accompanied by more open questions about the effects that the project team might not have considered. Some of the questions are also about the negative aspects of the project. Have they been thought about? Can they be avoided?

Outside the corporate world, more speculative approaches have increasingly been used to raise awareness of variances in areas such as gender, age, and environment.⁵⁸

Towards Broader Sustainability

Following in the seminal footsteps of Victor Papanek,⁵⁹ Buckminster Fuller,⁶⁰ and other historical advocates of sustainable design, the discussion on sustainability has broadened in the past two decades. Crucial contributions led the way. One was the United Nations Sustainable Development Goals (UN SDGs), a universal call to action to end poverty and protect the planet while improving the lives and prospects of all human beings. Another was the Paris Climate Agreement. This was an accord between governments based on the United Nations Framework Convention on Climate Change (UNFCCC), and the 2018 special report of the Intergovernmental Panel on Climate Change (IPCC) on the likely impact of a global temperature rise greater than 1.5° C. These documents brought greater urgency to the debate.

Similar to the way the focus of design has widened from products to services to strategies, approaches in the field of design for sustainability have broadened in scope over the years from improving environmental footprints, to considering longer term operations that might impact the planet on a global scale. The range of approaches is considerable: green design, product eco-design, emotionally durable design, design for sustainable behavior, cradle-to-cradle design, biomimicry design, sustainable product–service systems, design for the base of the pyramid, design for social innovation, systemic design and design for sustainability transitions.⁶¹

Some suggest that design, and the design process, can be used to change people's behavior. Design for sustainable behavior applies design for behavioral change to support the adoption of sustainable innovations and

- 62 Ceschin and Gaziulusoy, *Design for Sustainability*, 39.
- 63 Niedderer et al., *Design for Behaviour Change*, 11.
- 64 Kristina Niedderer et al., *Creating Sustainable Innovation through Design for Behaviour Change: Full Project Report* (University of Wolverhampton: Project Partners & AHRC, 2014), DOI: <https://doi.org/10.13140/2.1.4817.4409>.
- 65 Ceschin and Gaziulusoy, *Design for Sustainability*, 39.
- 66 Sampsa Hyysalo et al., "Codesign for Transitions Governance: A Mid-Range Pathway Creation Toolset for Accelerating Sociotechnical Change," *Design Studies* 63 (July 2019): 181–203, DOI: <https://doi.org/10.1016/j.destud.2019.05.002>. In their article Hyysalo et al refer to A. Idil Gaziulusoy and Chris Ryan who maintain that design research has generated experiential future scenarios and change pathways, see A. Idil Gaziulusoy and Chris Ryan, "Roles of Design in Sustainability Transitions Projects: A Case Study of Visions and Pathways 2040 Project from Australia," *Journal of Cleaner Production* 162, no. 20 (2017): 1297–307, DOI: <https://doi.org/10.1016/j.jclepro.2017.06.122>; A. Idil Gaziulusoy and Chris Ryan, "Shifting Conversations for Sustainability Transitions Using Participatory Design Visioning," *The Design Journal* 20 (2017): 1916–26, DOI: <https://doi.org/10.1080/14606925.2017.1352709>. For sustained, local experimentation engagements aimed towards low carbon transition, drawing from community design and practice theory, see Mikko Jalas et al., "Everyday Experimentation in Energy Transition: A Practice-Theoretical View," *Journal of Cleaner Production* 169 (December, 2017): 77–84, DOI: <https://doi.org/10.1016/j.jclepro.2017.03.034>; and Ezio Manzini and Francesca Rizzo, "Small Projects/ Large Changes: Participatory Design as an Open Participated Process," *CoDesign* 7, no. 3/4 (2011): 199–215, DOI: <https://doi.org/10.1080/15710882.2011.630472>. Design research has further built anticipatory strategic design initiatives in order to target the critical aspects of evolving transitions, see Luisa Mok and Sampsa Hyysalo, "Design for Energy Transition through Value Sensitive Design," *Design Studies* 54 (January 2018): 162–83, DOI: <https://doi.org/10.1016/j.destud.2017.09.006>. Design agendas have also been proposed that resonate with designing for sustainability transitions, such as transition design, see Terry Irwin, "Transition Design:

behaviors. This approach has been explored by designers since the second half of the 2000s.⁶²

This taps into a larger discussion on design for behavior change. In response to the challenges of design causing change in general, and behavioral changes in particular, design for behavior change has emerged in recent years as an explicit field of design study. It specifically examines the relationship between design, behavior, and change, and seeks to understand how we can intentionally transform a given situation into a desirable environmental or social outcome, and what those changes should possibly be.⁶³

Based on work by Kristina Niedderer and her colleagues,⁶⁴ Fabrizio Ceschin and Idil Gaziulusoy divide models for design for sustainable behavior into three groups: individualistic rational choice models, where the focus is on how individuals make choices and act; context-driven models, which see behavior as a consequence of the social structure in which the individual lives; and middle ground models, which combine the individual's role with the contextual approaches.⁶⁵

Katz has shown that in Silicon Valley, a third-generation wave of post-industrial companies are now forming. The goal of many of these organizations is to create innovations that are scalable and sustainable. Two examples of these third-wave companies are D-Rev, a design-driven social enterprise that develops products in Silicon Valley that they donate to users; and Catapult Design, who claim to be "designing WITH the other 90%." Katz takes special note of the Design Accord initiative, which ratified five principles of environmentally and socially responsible design practice.

Sampsa Hyysalo and his colleagues have come to the conclusion that, in recent years, design for sustainable transitions has entered into the realms of transition research and governance, particularly as regards to experimentation with new solutions and improving the means for future envisioning.⁶⁶ They situate transition design as an emerging area at the end of a design continuum, linked to other new areas of design for sustainability.

Transition Design—Design for Large Scale Transformations

Kees Dorst wrote in 2014 about open, complex, dynamic, and networked challenges, and proposed "framing": the capacity to identify hypothetical patterns of relationships which Dorst says is central to the designer's ability to shift problem situations.⁶⁷ The problem is often that even organizations that fully realize the fluid nature of the world around them often feel they cannot move forward without first defining the problem. But by defining the problem, Dorst says, they inadvertently freeze the context of the problem, and more often than not this is a grave mistake that will come back to haunt them as they try to implement their new solution.⁶⁸ Another challenge emerges when organizations shape their identities around established practices. The way an organization is structured and how it conducts its business very easily become a major part of what people feel is the organization's core: its identity and culture. This culture is embodied in the organization's goals, structures, processes, espoused values, practices, and the accepted definition of quality within the organization. This makes it extremely difficult for the staff to even intuit new practices, no matter how strongly and

A Proposal for a New Area of Design Practice, Study, and Research," *Design and Culture* 7, no. 2 (2015): 229–46, DOI: <https://doi.org/10.1080/17547075.2015.1051829>; Terry Irwin et al., "Transition Design 2015: A New Area of Design Research, Practice and Study that Proposes Design-Led Societal Transition toward More Sustainable Futures" (report, Carnegie Mellon University, 2015), available at https://design.cmu.edu/sites/default/files/Transition_Design_Monograph_final.pdf. Designing for environmentally sustainable social innovation, see François Jégou and Ezio Manzini, eds., *Collaborative Services: Social Innovation and Design for Sustainability* (Milan: Edizioni POLI.design, 2008), available at https://www.strategicdesignscenarios.net/wp-content/uploads/2012/05/EMUDE_Collaborative-Services.pdf; Ezio Manzini, "Making Things Happen: Social Innovation and Design," *Design Issues* 30, no. 1 (2014): 57–66, DOI: https://doi.org/10.1162/DESI_a_00248. Designing with intent for sustainable behavioural change, see Dan Lockton, "Design with Intent and the Field of Design for Sustainable Behaviour," in *Living Labs: Design and Assessment of Sustainable Living*, ed. David V. Keyson, Olivia Guerra-Santin, and Dan Lockton (Switzerland: Springer, 2017), 75–88, DOI: https://doi.org/10.1007/978-3-319-33527-8_7; Derk Loorbach and Jan Rotmans, "The Practice of Transition Management: Examples and Lessons from Four Distinct Cases," *Futures* 42, no. 3 (2010): 237–46, DOI: <https://doi.org/10.1016/j.futures.2009.11.009>. And designing for one-planet lifestyles, see Michael Lettenmeier, *A Sustainable Level of Material Footprint: Benchmark for Designing One-Planet Lifestyles* (Helsinki: Aalto University, 2018).

67 Kees Dorst, *Frame Innovation: Create New Thinking by Design* (Cambridge, MA: MIT Press, 2015).

68 *Ibid.*, 13.

69 *Ibid.*, 17.

70 Marco Steinberg, interviewed October 7, 2019.

71 Terry Irwin, "The Emerging Transition Design Approach," in *Proceedings of Design Research Society DRS Conference 2018*, University of Limerick, June 25–28, 2018, available at <https://www.academia.edu/36984858/>; Irwin et al., "Transition Design 2015."

72 Ceschin and Gaziulusoy, *Design for Sustainability*, 131.

73 Margolin, *The Politics of the Artificial*, 31.

obviously they are needed to meet changes in the external environment.⁶⁹ Design practitioners agree. In general, many organizations seem to want to change, but are challenged by time constraints and organizational structures.

"So what does that organizational blueprint [capable of transformation] look like? ... That blueprint implies a very different kind of organization than currently exists—do institutions, can institutions change themselves? And if you want to take a cynical perspective on this ... by definition they can't. Because organizations will apply the logic of the organization and how they transform themselves. And by virtue of that, it won't be transformative enough, it will be an extension of current logics."⁷⁰

Terry Irwin, Director of the Transition Design Institute at Carnegie Mellon University, has defined a transition design framework that brings together an evolving body of practices that can be used to visualize and map out complex problems and their interconnections and interdependencies; situate them within wider, spatiotemporal contexts; identify and bridge stakeholder conflicts and leverage alignments; facilitate stakeholders' co-creation of visions of desirable futures; and identify leverage points in the wider problem system where the organization might situate design interventions. Rather than a fixed, templated process, the framework provides a logic that deploys an evolving set of practices relevant to designing in the service of systems level change.⁷¹ This approach was developed and has been used at the School of Design at Carnegie Mellon University since 2012.

The changing role of design and its use in large scale, increasingly multi-disciplinary projects⁷² means that designers must be able to articulate what they contribute to the work they do together with other professionals. Due to the complexity of transition projects, more often than not these activities are undertaken by actors who wish to bring about change in collaboration with each other, which may or may not involve professional designers.

In 2002, Victor Margolin said that the conventional divides between design practices are breaking down of their own accord as designers confront problems they are unable to grasp or solve. We might regard this as a crisis, he says, but might also consider it as a healthy opportunity to look beyond the existing boundaries of the distinct professional practices. Despite a history of separating these practices, there is an emerging interest among some design educators in generating new academic programs that cut across departments of engineering, industrial design, and marketing, for example, or setting up projects where students from different departments, such as architecture and design, can work together.⁷³ Today, this collaboration across fields and with actors across siloes is no longer a unique instance—it is becoming increasingly widespread.

Banny Bannerjee founded the Change Lab at Stanford, after his time heading the design program, to focus on these large-scale, interconnected challenges and the dynamics of change. He says

"A lot of my work now ... brings in behavioral sciences, it brings resilience theory, brings in ecology, brings in macroeconomics, brings in business

74 Banny Bannerjee, interviewed November 11, 2019.

75 For more information, see <https://www.newschool.edu/parsons/mfa-transdisciplinary-design>.

76 See <https://tjdi.tongji.edu.cn/about.do?ID=152&lang=en>.

77 See <https://www.aalto.fi/en>.

78 Lorraine Justice, *China's Design Revolution* (Cambridge, MA: MIT Press, 2012).

strategy, brings in data sciences etcetera.... Change Lab for me has been a platform that has allowed for a few things. It has allowed me to look at the dynamics of change. It has allowed me to look at how you react to things that are changing quickly, where the rate of change that you are being subjected to is faster than the normal adaptation rates that we have. And then much more importantly, how do you innovate and drive the things that you would like to have, at the system level, working all the way down to the details?"⁷⁴

In terms of educating transdisciplinary capabilities, there is the Master's in Transdisciplinary Design at Parsons New School,⁷⁵ which emphasizes a collaborative, systems-oriented approach to design and social thought; while Tongji University has several interdisciplinary programs, including Artificial Intelligence and Design.⁷⁶ In other instances, entire universities have been built around cross-disciplinary approaches, such as Aalto University,⁷⁷ which combines the fields of art and design with technology and business. The Aalto University strategy no longer seeks to promote any individual field, but rather educate those seeking to shape a sustainable future collaboratively. It emphasizes that radical creativity and an entrepreneurial mindset are important approaches for everyone.

Although the early approaches of sustainability and transition design were predominantly Western, many countries in Asia have been rapidly catching up and going beyond their peers. In China, the development has been considerable. In 2012 Lorraine Justice showed how quickly the design industry had grown by that time in China,⁷⁸ and since then governmental measures in areas such as sustainability have paved the way for nationwide initiatives that exceed the scope of similar initiatives in Europe or the US. Korea and Japan have long observed the relationship between design, large national companies, and government, and Singapore is investing heavily in sustainability, with innovation engaging design. India is awakening its design capabilities, and many other Asian countries have approached large-scale transformational projects via design. As the challenges governments face are larger and more complex than ever before, there is an increased understanding that purely financial measures, or purely technological approaches might not be enough. More creative approaches are needed if we are to imagine entirely new solutions.

Simultaneous to large-scale transformations, and an increasingly systemic approach to challenges, there has also been a lot of movement toward incorporating human-centered viewpoints by including users and citizens in the design process. This turns the viewpoint from object and process to enabling people and communities to participate in transforming their own environments.

People — The Shift Towards Social Design and Inclusion

In their 2002 paper, Sylvia and Victor Margolin call for an alternative to product design for the market, and a new model of social practice. They asked for design for populations in need, and for users to be included in the design process, in what they dubbed "the social model."

- 79 Victor Margolin and Sylvia Margolin, "A 'Social Model' of Design: Issues of Practice and Research," *Design Issues* 18, no. 4 (2002): 24, DOI: <https://doi.org/10.1162/074793602320827406>.
- 80 Bruce Brown et al., "Introduction," *Design Issues* 35, no. 4 (2019): 1, DOI: https://doi.org/10.1162/desi_e_00516.
- 81 Elizabeth Resnick, ed., *The Social Design Reader* (London, UK: Bloomsbury Visual Arts, 2019).
- 82 Julier, *Economies of Design*, 163.
- 83 Ezio Manzini, *Design, When Everybody Designs: An Introduction to Design for Social Innovation* (Chambridge, MA: MIT Press, 2015).
- 84 See for example Richard Stengel, *Information Wars: How We Lost the Global Battle against Disinformation & What We Can Do about It* (New York: Atlantic Monthly Press, 2019).
- 85 See for example Maria dos Santos Lonsdale, ed., *Information Design Journal* (Amsterdam, NL: John Benjamin Publishing Company), DOI: <https://doi.org/10.1075/idj>; Juuso Koponen and Jonatan Hildén, *Data Visualization Handbook* (Helsinki: Aalto University School of Arts, Design and Architecture, 2019).

"A broad research agenda for social design must begin by addressing a number of questions. What role can a designer play in a collaborative process of social intervention? What is currently being done in this regard and what might be done? How might the public's perception of designers be changed in order to present an image of a socially responsible designer? How can agencies that fund social welfare projects and research gain a stronger perception of design as a socially responsible activity? What kinds of products meet the needs of vulnerable populations?"⁷⁹

A lot has happened since 2002. Now societal agendas are widespread, and evident in well-recognized design approaches called, variously, participatory, humanitarian, inclusive, and social.⁸⁰ In 2019, *The Social Design Reader*, the first in the field, by Elizabeth Resnick,⁸¹ was published, bringing together key texts from over the last fifty years, and tracing the emergence of the notion of socially responsible design.

Many of the approaches within social design are built on the idea of broader engagement during the design process and, particularly in the Nordics, on participatory design.

Towards Diversity and Community

Guy Julier,⁸² in studying social design and designing for municipalities, promulgated a significant concept that he calls "design citizenship." This involves design as a skill, an attitude, and a disposition. Julier argues for an understanding of design that extends beyond the domain of specialized professionals. He calls for design embedded in the lives of citizens, supported by key cultural, educational, and entrepreneurial activities. He also sees it to emerge out of deep, considered research and analysis of a location's pre-existing assets. For Julier this suggests a turn towards bringing citizen life back into control.

Ezio Manzini famously talked about design and social change in a connected world as

"In transition toward sustainability: a world in which everybody constantly has to design and redesign their existence, whether they wish to or not; a world in which many of these projects converge and give rise to wider social changes; a world in which the role of design experts is to feed and support these individual and collective projects—and thus the social changes they may give rise to."⁸³

There is, in this wider discussion about participation and co-creation, the questions that arise in relation to privacy, personal data, and access to data. Large-scale and complex social, economic, and industrial issues are not exactly easy to fathom. Add to that complexity the existence of huge amounts of data, and the possibility of receiving mis- and disinformation, and the challenge to understand the contours and shades of an issue is even greater. Lately, there have been accusations of "fake" news, suspicions of deepfake videos, awareness of ongoing disinformation campaigns, and a very public discussion about information warfare.⁸⁴

During the past twenty years, information design has developed into an established field with its own body of journals, books, and educational programs.⁸⁵ With the help of design, we can take large quantities of data and

- 86 Arturo Escobar, *Designs for the Pluriverse: Radical Independence, Autonomy, and the Making of Worlds* (Durham and London: Duke University Press, 2017), 19.
- 87 Carl DiSalvo, *Adversarial Design* (Cambridge, MA: MIT Press, 2012), 116.
- 88 John Dewey, *The Public and Its Problems: An Essay in Political* (Athens, OH: Swallow Press, 1954), 126.
- 89 Bruce Brown et al., eds., *Design Issues* 34, no. 4 (Cambridge, MA: MIT Press, 2018), <https://www.mitpressjournals.org/toc/desi/34/4>.
- 90 Karin Hansson et al., "Provocation, Conflict, and Appropriation: The Role of the Designer in Making Publics," *Design Issues* 34, no. 4 (2018): 3–7, DOI: https://doi.org/10.1162/desi_a_00506.
- 91 Tanja Rosenqvist, "Redirecting a Scattered Public toward Alternative Matters of Concern: Shifting Perceptions of Urban Wastewater Governance in Indonesia," *Design Issues* 34, no. 4 (2018): 51–65, DOI: https://doi.org/10.1162/desi_a_00511.
- 92 Otto von Busch and Cigdem Kaya Pazarbasi, "Just Craft: Capabilities and Empowerment in Participatory Craft Projects," *Design Issues* 34, no. 4 (2018): 66–79, DOI: https://doi.org/10.1162/desi_a_00512.

turn them into a visualization, animation, or artifact that makes them more understandable. Complex issues with large datasets, such as national debt or levels of carbon dioxide, have become more accessible and comprehensible as a result.

The focus has since turned to the source of the data, how it is generated and collected, and by whom, and how data is processed for different uses. Participatory data collection practices are increasingly the norm, and how communities choose which data they will allow others to collect sheds light on what people find meaningful. There is also much more interest in what the (local, national) worldview is, and in individual agency and the challenges related to diversity, decolonization, and inclusion. Arturo Escobar sees designs for the pluriverse as a tool for reimagining and reconstructing local worlds and reminds us that our contemporary crisis is the result of deeply entrenched ways of being, knowing, and doing, often against the backdrop of modernism, consumerism, and patriarchy.⁸⁶

Carl DiSalvo builds on Dewey's work in his 2012 book *Adversarial Design*.⁸⁷ He says that inquiry is a process of skilled examination and reconstruction that renders problematic situations sense-able, or able to be perceived and experienced. This process of inquiry makes what Dewey⁸⁸ called the expanded, multiplied, intensified, and complicated aspects of a problematic situation apparent and known and thereby more easily addressed and acted upon.

As an example of this turn towards the social, an entire issue of *Design Issues*⁸⁹ was recently dedicated to design as provocation—a means to create awareness for political issues and as part of social processes—a notion explored thoroughly in the field of participatory design. Participatory design uses design and the design process to problematize design and research objectives and question broader sociotechnical and cultural configurations, as do critical design and reflective design. Similarly, speculative design, critical making, design fiction, and feminist utopian design view the design process as a means of critiquing social and political norms and values and suggesting alternative interpretations and possibilities. Adversarial design also emphasizes the agonistic space that emerges in the design process as a space to reformulate political issues. These approaches share an underlying commitment to viewing design as embedded in the production of public life by rendering political and social issues and communal struggles visible. The motivation is often much less about designing objects and more about infrastructuring—enabling careful assemblages and alternative pathways for connection and participation. From this perspective, designers are required to make a long-term commitment to the communities that they help to develop by design.⁹⁰

Examples of such social design are redirecting the public in Indonesia toward alternative viewpoints of wastewater, starting with the understanding that changes to the governance of decentralized sanitation were needed,⁹¹ showing the complexity of empowerment in two projects: The Jawaja Project in India and the Doğal Boya Araştırma ve Geliştirme Projesi [Natural Dye Research and Development Project] (DOBAG Project) in Turkey,⁹² and seeing craftspersons not as consumers of design expertise

- 93 Annapurna Mamidipudi, "Constructing Common Knowledge: Design Practice for Social Change in Craft Livelihoods in India," *Design Issues* 34, no. 4 (2018), 37–50, DOI: https://doi.org/10.1162/desi_a_00510.
- 94 Marco Steinberg, interviewed October 7, 2019.
- 95 Banny Bannerjee, interviewed November 11, 2019.
- 96 Bryan Boyer, Justin W. Cook, and Marco Steinberg, *In Studio: Recipes for Systemic Change* (Helsinki: Helsinki Design Lab, 2011), 19.
- 97 *Ibid.*, 20.

but as active producers of cultural value as an important step toward their emancipation in India.⁹³

Working Together

Collaborating with large international organizations, such as the United Nations for example, is not about designing new solutions for someone, but rather modelling and applying design skills for and with them, and adopting a very collaborative and participatory design-like approach. Marco Steinberg describes his process while working together with the UN Development Program in Mongolia, Ulaanbaatar, thusly:

"So what would be the overall strategy for making Ulaanbaatar the [country with the] cleanest air in the world? Of course, there are things about culture, there are things about energy production, heating, there's systems, there's policies, and so on. So we went in there — and not to solve this in any way, but to help a kind of partnership that was beginning to form between some investment banks, local banks, and the UN and some others, about how do you build this kind of coalition and what would be a strategy that could allow you to begin to deliver some of those solutions.... And so a lot of that is to sensitize the staff to doing things differently, to having different kinds of conversations that they might not be used to, and to begin to question whether their way of working is aligned with the broader objectives of the UN. And if it's not always aligned, what are the bottlenecks, and where should they, kind of, put their efforts [in this case] around air pollution and innovating."⁹⁴

Part of this process is engaging not only an individual citizen, but the entire network of citizens, governments, public organizations, and companies together to articulate what it is that they want to achieve. Banny Bannerjee describes related work he undertook with Change Labs

"We really lock people into articulating what it is that they really want to achieve. And then challenge them to have their achievements framed in ways that are genuinely transformative. And they're articulating the future as they would really want it, as opposed to incremental shifts from what is happening today. So I'm essentially saying 'Okay, these are some of the dimensions of change. These are the criteria for success. This is what success looks like. Now we need to figure out how to get there.'"⁹⁵

Bryan Boyer, Justin Cook, and Marco Steinberg cowrote a book that provides readers with recipes for systemic change. The authors talk about the ability to redesign decision making at every level — from the individual to the institutional — so that they can be more active during this time of uncertainty and continual change.⁹⁶ Where previously the focus has been on improving inherited modes of operating, today's challenge is to dramatically rethink existing configurations or even create new ones. The authors hope to advance society's ability to cope with complex issues, such as climate change and demographic shifts, by developing tools that help institutions better conceptualize and respond to 'wicked' problems.⁹⁷ They argue that governments spend billions annually on research and development in specific areas, such as technology and defense, but they tend to invest little in themselves — in developing new ways of tackling problems.

- 98 Boyer et al., *In Studio*, 21–22.
- 99 Marco Steinberg, interviewed October 7, 2019.
- 100 Design for Government, see <http://dfg-course.aalto.fi/2015/about-design-for-government/>.
- 101 John Heskett, *A John Heskett Reader: Design, History, Economics* (London: Bloomsbury Publishing, 2016).
- 102 Julier, *Economies of Design*.
- 103 Claudia Garduño García, *Design as Freedom* (PhD Dissertation, Aalto University School of Art, Design and Architecture, 2017), <https://aaltodoc.aalto.fi/handle/123456789/25259>.
- 104 Mariana Mazzucato, *The Value of Everything: Making and Taking in the Global Economy* (London: Penguin Random House, 2018).
- 105 Buchanan, "Worlds in the Making," 8.
- 106 Frederic Laloux, *Reinventing Organizations: A Guide to Creating Organizations Inspired by the Next Stage in Human Consciousness* (UK: Nelson Parker, 2014), 267.

Our governments often address the most pressing 21st-century challenges with 18th-century principles. Today's challenges lie in rewriting inherited assumptions about prosperity, and creating ways of working across silos and other arbitrary boundaries — and fast.⁹⁸

In an interview, Steinberg expanded on this.

"Design ... has a kind of capacity that was desperately needed in health care, and education, and rethinking systems. And governments were the owners of these problems. And so we felt these two communities [design & governments] needed to meet each other.... The consultancy approach to trying to change this government was not going to work. For as long if design is something that is done *to* governments, it's not going to fundamentally change government. Design needs to be *in* government to change it. And we need to begin to have conversations in government about design and good design literacy needs to grow in government."⁹⁹

Many universities now have educational programs teaching people working in governments how understand the possibilities of design better, and educating design students to develop their capacity to work within governments. Aalto University's course Design for Government has been run yearly as part of its Creative Sustainability program since 2014,¹⁰⁰ and Design for Democracy programs are appearing globally.

Designers are joining today's wider societal discussion of what constitutes value, and for whom. Many viewpoints describing the topic of economics within design have emerged over the past two decades, ranging from John Heskett's *Design Reader: Design, History, Economics*¹⁰¹ to Guy Julier's *Economies of Design*,¹⁰² with its much more critical stance towards neoliberalism.

As an example, in her recently published book *Design as Freedom* (based on her doctoral thesis) Claudia Garduño García introduces an alternative driving principle for design, arrived at largely through her practice-based work with Aalto Lab Mexico. She questions why economic growth is so important, and looks at how cultural plurality might enable or inspire the emergence of a more just and sustainable world. She says that the goal ought to be to find a more appropriate goal for the future of humanity, such as protecting the freedom of all peoples, or expanding the forms and modes of activity that enable people to lives they value.¹⁰³ She posits freedom as both the means and the end of design.

This notion of designing for freedom resonates with a larger discussion questioning our economic value systems, with authors such as Mariana Mazzucato, whose *The Value of Everything*¹⁰⁴ looks at how value is created, for whom, and why. Massive technological disruptions, new ways of working, and global societal changes are making an increasing number of scholars question the foundations of our societal contracts. Mazzucato calls for the creation of an economics of hope — a concept not too distant from designing freedom.

Simultaneously, there is an "organizational culture reform" movement happening, which is concerned with a deeper understanding of the values and purposes organizations promote.¹⁰⁵ Some say that change (as a concept) is dated and related to a mechanistic worldview¹⁰⁶ implying that development is linear and more is better. From that viewpoint, organizations are

107 Ibid, 28.

108 Ibid, 215.

109 Marco Steinberg, interviewed October 7, 2019.

110 Irwin, "The Emerging Transition Design Approach," 16.

machines whose outcomes can be made more efficient.¹⁰⁷ To counter this, organizations might be seen as self-managing, living systems, where the system has the capacity to sense changes in its environment and to adapt from within. The focus then is on fostering environments, or ecosystems, to respond creatively to life's emerging, surprising, non-linear unfolding. People are allowed to act on what they sense is needed, and change happens naturally, everywhere.¹⁰⁸

Aligning Theory and Practice — Combining Thinking with Making

What most of design practices have in common, whether speculative design inside a company or creating a new approach for better water management in Timor, is that they combine a thought process with hands-on, practical design work. This might show itself as designing a pizza menu to show how climate change has influenced our food habits, or by facilitating a mock meeting to explore how an organization might manage resources and make decisions.

“So the conversation I’ve had with many of these organizations, at the senior management level, is ‘What would this look like?’ And the way to have that is not to talk it, but to quite literally prototype that.... Shaping decision making means you need to connect the thinking, which is strategic (about how the institution understands itself and all of that) to how it acts, and you cannot separate the two. So a good initiative would mean that you’re working with top management, and helping them quite literally prototype a different way of framing how they manage risk, how they design a budget, how they run their meetings. These are all the kind of foundational building blocks that create new behaviors. And at the same time, you’re involved with some concrete initiative on the ground. Because it’s only by doing in the messy world that you understand the kind of impure nature of why the organization works a certain way. It’s very easy to be sort of theoretical and just strategic. And then ideas always are kind of pure and theoretical. But the world is actually very impure. So the challenge is how do you translate those ideas and impure world and the learnings that that creates that push back on our idea about how you should budget.”¹⁰⁹

Terry Irwin says that the transition design approach could be likened to acupuncture.¹¹⁰ Banny Bannerjee takes a very similar stance: thinking is paired with what he calls systems acupuncture — a hands-on project that makes the challenge at hand more concrete.

“After understanding the system dynamics, then you basically ... we do what we call acupuncture. Like we essentially say, ‘Now let’s do the acupuncture in the system, where would you change something? And what is the change that you’d want out there?’.... And then you go into intervention design, and essentially say that if we wanted to change it, ‘What is the most synergistic set of interventions and what are those interventions? Where would the entry point be? What is it that you’re using, which method, which mechanisms are these?’.... There’ll be a variety of things, somewhere you’re changing policy, other places are changing behavior. Third, you’re creating a technological

- 111 Banny Bannerjee, interviewed November 11, 2019.
- 112 Nelson and Stolterman, *The Design Way*, 18.
- 113 Manzini, *Design, When Everybody Designs*, 31.
- 114 Marco Steinberg, interviewed October 7, 2019.

platform or fourth, you might be actually creating a business ecosystem. It can be very many different things.¹¹¹

In 2012, Nelson and Stolterman¹¹² describe a similar approach, combining the strategic approach with the making. “Design wisdom,” they state, “is an integration of reason with observation, reflection, imagination, action, and production or making.” In 2015, Ezio Manzini saw design as the outcome of combining three human gifts: critical sense (the ability to look at the state of things and recognize what cannot, or should not be, acceptable), creativity (the ability to imagine something that does not yet exist), and practical sense (the ability to recognize feasible ways of getting things to happen). Integrating the three makes it possible to imagine something that is not there, but which could be if appropriate actions were taken.¹¹³

As the design practice matures, it has been interesting to see how designers are now emphasizing rigor in both thinking and making. Approaches to using designerly ways to generate change are now more well-defined and developed, facilitating that-which-does-not-yet-exist. This is combined with very practical and hands-on design work and interventions that ground these changes and potentialities in something tangible.

Tangible solutions for future challenges are urgently needed. If we want to find solutions to the UN 2030 Sustainability Development Goals in time, there is an instant need to act, that several of the design practitioners I interviewed referred to.

“Ten — a little over ten years — to basically redesign the world is a massive task. And the numbers I associate with this is that it took us 20 years to implement a smoking ban in the West. It’s taken us almost 60 years to implement affirmative action in the US, we’re nowhere close to that. And those tasks are tiny, in comparison to this [the SDGs]. So I think, you know, either we just completely succumb, give up, and that’s it. Or something quite radical needs to happen. So not only is there a need for, I think, a strategic design capacity, because we’re very well equipped with a cross-cutting capacity, across any capacity, to understand how you might begin to address some of these complex issues. We have ... I think the design approach also lends itself very well to managing these kinds of uncertain kinds of issues. I think we’re needed, not at the surface end of things alone, but at the strategic end in the decision making, because those complement each other. And we need to not only help institutions become a bit better. We need some form of really quite radical transformation to happen.”¹¹⁴

The arrival of COVID-19 implies that there will be even greater need for us to be able to address uncertainty and align ourselves with even more radical transformations. What new practices emerge, and how design can contribute to these changes, is a discussion we have only just begun. I have written this article to contribute to this discussion, exemplify some of the thinking and hands-on work that designers engage in when participating in changing the world around them, and to encourage further research into the topic of change by design.

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