

An Exploration of Some Aspects to Consider When Opening Futures

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Abstract

This paper follows the form of an essay, it offers a narrative review inquiring conceptually about opening futures. The main research question is: What concepts could help elucidate the new position of designers when futures are open? Four branches of literature from design are addressed, considering their core approaches: participation, infrastructures, systems thinking, and narratives. Focus on these four approaches could lead to profound discussions about what it means to open futures and the current relevance of expert design.

Keywords: complex systems, collaborative design, designer's skills, participatory design

1. Introduction

This paper reflects on some concepts related to futures –thinking and making– and the roles designers could take when opening futures to others (i.e., flexible alternatives according to multiple realities and world views). The imagination of optimistic alternative futures is increasingly touted as necessary in a period marked by catastrophism (Urry, 2016). As Escobar (2021) argues, design –the activity– presents an opportunity to help people regain "their ability to see and make otherwise, so as to make plural futures again possible" (Escobar, 2021, p.25).

On the one hand, everybody can regain their ability to do otherwise and get alternative pathways to the current state of the world through approaching the collectively faced existential crises as a matter of design. On the other hand, for designers –professionally trained to create conditions for an outcome– it means rethinking their role in society. Designers deliberately get into futuring matters by prescribing normative solutions –for example, a new product or a new service. Manzini (2015) pointed out some of the roles designers could take when futures are open for everybody to design, which implies translating and scaling-up solutions. However, traditionally trained designers could have fewer opportunities to prescribe and shape the world when futures become open. This context calls for a rethinking of the position of expert designers within the domains of material production.

Manzini (2015) has also pointed to a tension between expert and diffuse design. The work of expert designers is to provide solutions or interventions to problems –most of the time not experienced by themselves. Expert designers are part of a specific culture with specific domains of action (Julier, 2006) in production and consumption. Diffuse design supposes an attitude towards change that anybody with an agency can develop by taking ownership and shaping means –material and communicational. Recent socio-technical changes contextualize this tension (e.g., technological changes in rapid manufacture and availability of manufacturing tools, widespread information and misinformation, and the clashing of values among different groups and communities). Expert designers may need to adjust their practices accordingly to these contexts (Margolin, 2007).

To remain pertinent, expert designers –traditionally trained– face the need to reframe their practices beyond the provision of technical solutions. Various traditions of design discourse propose alternative approaches to keep on focus. Concerning some of these traditions and calls to make futures open and flexible, this paper offers a narrative review bridging various ideas found in literature to answer the research questions: What concepts could help elucidate the new position of designers when futures are open? Complemented by two sub-questions: 1) What are the standards by which designed futures are assessed? 2) What practical implications are there for designers who want to open future-making?

The primary resource used here is what others have written and thought about futures and adjacent themes. The paper contributes to the programmatic thinking about futures. However, this is not a complete picture but a collection of ideas; futures is an area of knowledge that is continually changing (Sardar, 2010), as is design (Valtonen, 2020).

The following section discusses the denunciation or critiques to current modes of design futures. Section 3 introduces four conceptual approaches to opening of futures, and section 4 presents a brief discussion and conclusion.

2. Futures by Design: Denunciation and Control

In the commercial-oriented activity of design, the work of designers about the future is conditioned to the production and reproduction of apparently never-ending opportunities for technical solutions – innovation. However, these forms of future-making are denounced for imposing modes of being and doing over people. In this vein, Urry (2016) denounces planning as exerting control over the future. Denunciation also happens within design literature, particularly in critical branches that question the doings of design from a socio-technical perspective. In this regard, the concept of "defuturing" proposed by Fry (2020) is helpful to understand that traditional design is not the only possible way and that it suppresses or conditions the future to one alternative based on adding more technical solutions (new things).

Design is a creative task. Bendor (2017) stated that design is a form of futurescaping –creating the landscape of the future. However, according to Willis (2006), design is a dual activity; people design objects, and those objects design back people –in their modes of being and doing. The objects of design, and particularly all things designed for mass consumption, are part of a gear that lock-in what people can do and think, with the participation of designers who knowingly or unknowingly create the means of control for the future.

According to Willis (2021, p.84), most designers –in commercial practices– are faced with giving "'solutions' to non-problems" (Willis, 2021, p.84). This form of design is preoccupied with creating fast change and innovation for the sake of innovation. On the contrary, the emergence of a design occupied with existential problems –such as inequalities, racism, climate change, the rise of antidemocracy, fake news, and others– cannot be reduced to the production of mere things. A new design should seek to develop a politicized mode of design that contributes to the programmatic thinking required for the transitions to a just world (White, 2020). Politicizing design requires a new set of standards to assess design practices.

Recent approaches to design emerge as critical to the lock-ins of a "defutured" worldmaking (Fry, 2020) with a discourse oriented to transformative action by proposing futures from the sites of criticism, speculation, and fiction (Dunne & Raby, 2013). Although many of these practices are said to go against consumerist and techno-capitalistic imaginaries, they emerge in modes that are not unproblematic (see Interakcije, 2016). Denunciation or criticism of these modes of designing is based on their focus on Eurocentric values, with high concept aesthetics and presenting realities that most of the world already experience in a negative light. Denunciation is also against opening the future as a gallery or exhibition object aimed at scaring or wowing people –in the form of dystopian narratives.

The idea of design as a collection of visual artifacts that inspire, support, or challenge possible futures is not new. Artifacts that stimulate action towards one or another future are an essential part of the work of expert designers. A known example is the Futurama exhibition by Norman Bel Geddes (Maffei, 2012), which helped shape a global narrative about urbanism based on individually owned cars. In commercial settings, the usual tool of a designer to gain favor for the development of a project has been the prototype, ranging from basic visual sketches to complex objects imitating the qualities

and functions of a product. This is not to say that all designers work with the future in mind, but their efforts are oriented to creating the conditions for something that has not yet been created, at least as a tool to set the expectations. If the future is opened through artifacts, how do designers avoid colonizing the future? Or so, how to prevent defuturing by design.

2.1. Opening the future by design

The quest for measurable and universal design methods sought to ensure positive outcomes each time. Methods became a culprit of design with rules for color, shape, size, and even functions (Papanek, 1988). Standards became a big part of the definition of design methods and their modes of future-making –see Jones, 1992. Present-day design practices that aim to be more than object creation, such as design thinking and design sprints, reproduce this algorithmic way of thinking, universalizing future-making as problem-solving (offering one size fits all solutions).

Tonkinwise (2017) argues that designers working on structural change should be radical and engage in visioning in two ways: accepting that the outcomes may not be expected and considering that some aspects of the future cannot be anticipated. This form of approaching the future requires intention and recognition of designers' role in approaching change. Under this perspective, the future cannot be treated as an issue to solve because what will be cannot be fully known. Instead, each future should be considered a possibility but never as a way of control.

One may wonder about the relevance of opening to plural futures instead of creating standards for control. Firstly, alternative futures co-exist and may not require the constant production of novelties, as the introduction of new objects does not cause new futures. Instead, futures emerge from the doings of people and the relations between different agents, humans, other forms of life, and environments. Secondly, by opening futures, designers can help understand the limitations and scope of their interventions and plan their practices accordingly (Margolin, 2007). Thirdly, the recognition that design activity impacts the social and cultural layers of reality without being limited only to the use of technologies (Björgvinsson & Severson, 2014). Here, the point is that people have different expectations about the future (see Borup et al., 2006); designers are not distinct and should understand that their expectations –or those for whom they design for– when materialized could limit the opportunities of others.

More than scenarios presented as visual artifacts, creating conditions for distributed action can be pointed as one possible contribution of design to future-making. For example, it could be by facilitating collective narratives (Jarva, 2014) or assembling the stage for the political viability of shared discourses (Hajer & Pelzer, 2018). Distributed social actions require applying designers' creative skills at specific scales of action to benefit more than a particular stakeholder.

2.2. Controlling time

Foresight for strategy-making (guided for actions and decisions to shape the future) is commonplace to think about future alternatives. A tool popular among foresight practitioners is the so-called futures cone (Hancock & Bezold, 1994).

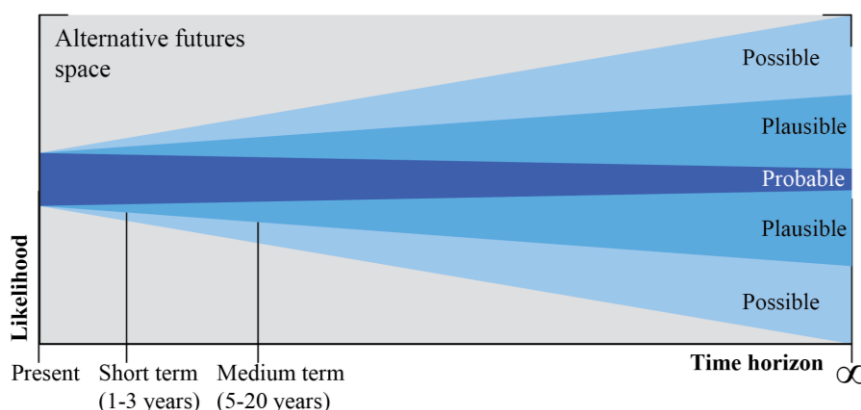


Figure 1. Adapted from Hancock & Bezold (1994)

This tool assesses future alternatives in two scales, time horizon and likelihood (Figure 1). This tool was created for use in risk assessment; to help evaluate the desirability of thinkable prospected futures. Desirable future scenarios are the ones to be acted upon and supported in their achievement. This represents a way of closing the future to the most favorable scenarios, which brings the inevitable question: favorable to whom?

Time horizons are probably the first aspect of the future that people consider. Short-term futures are more accessible to foresight, as the expected changes can be anticipated, which [Hancock & Bezold \(1994\)](#) refer to as path continuities, while planning can be pursued for medium-term futures, but not for long term ones because the space of probable thinkable futures decreases as conditions become uncertain. This tool represents an algorithmic form of thinking. Therefore, it is not surprising that many designers have adopted it without questioning the variability and incompatibility of many futures according to their own expectations.

Thinkable prospected futures depend on who is doing the thinking and assessing their desirability. An optimal solution achieves a desired future –paraphrasing [Simon's \(1996\)](#) moving to a preferred situation. The access, inclusion, and representation of diverse populations in the deployment of technologies is an aspect that is commonly neglected and criticized (see [Costanza-Chock, 2020](#)). If the definition of what is desired, in its likelihood and time horizon, is left to the decision of those who already hold power, what kind of change can be expected?

According to [Pschetz et al. \(2016\)](#), in design, two attitudes can be found in relation to time, pace, or orientation. As a pace, time defines the rates at which change happens. And as an orientation, time is taken as destiny or outcome. These two attitudes indicate that designers assume some power or at least a responsibility for controlling time when working on futures. What is put out in the world in the form of products, images, and services has lasting effects and may introduce new social forms or disturb existing ones. For example, imposing capitalistic rhythms to all forms of life ([Lefebvre, 2004](#)). However, the persistence of those effects is not always in the scope of the work of expert designers.

Opening to plural futures requires rethinking design. Specific calls or proposals have been previously posited, of which design for social innovation and sustainability ([Manzini, 2015](#)) and Transition design ([Willis, 2015](#); [Irwin, 2015](#)) are widely known examples. However, in the following section, I take some concepts from different traditions to propose a program for action about futures –already suggested in academic design discourse.

3. Some Approaches to Open the Future

This section presents some conceptual approaches from various design traditions to open design and future-making to others while negotiating the position of expert designers. The conceptual approaches presented in this section represent traditions of thought related to futures –thinking and making– in which academic design discourse is engaged, some of which span up to several decades, to name them: participatory and collaborative design, critical and speculative design, systems thinking design, design for sustainability and social innovation, experiential futures design –as a narrative review, this is not a systematization of existing literature.

3.1. Participation and Distributed Values

In commercial activity, futures are taken as a source of possible value ([Julier, 2017](#)). According to [Brown & Katz \(2009\)](#), a project's desirability, viability, and feasibility can assess the foreseeable value that design presents. These views imply that the work of expert designers is in controlling the conditions for an expected outcome to come into fruition. In capitalistic societies, this can be translated as creating the conditions for private individuals to increase their wealth (accumulate). In this sense, design produces self-fulfilling prophecies by representing the future and setting the constraints for its realization. For example, during the 1990s the company AT&T, a communications services provider in USA, prepared the landscape for upcoming internet-based communications by setting the advertisement campaign "You will" (for reference, [Kitalong, 2000](#)). In this series of advertisements, the future is introduced as new opportunities for everyday life.

The future in commercially oriented design is also used as a persuasive tool that produces and reproduces a status quo. [Mazé \(2019, p.26\)](#) suggests that acknowledging that things can be different

opens for political questions about what or who should be present, how and what should change, and what difference it should make. Thus, [Mazé \(2019\)](#) proposes looking at design as a profoundly political act. It means not using the future to engender more technocentric values but to use visions to engage in ethical and philosophical questions –existential ones.

[Candy & Kornet \(2019\)](#) suggest using ethnographic experiential methods to inquire what people want, expect, and fear about the future, but not to derive possible value or functions as it would be in commercial practices. Instead, aiming at the opening to future interactions and relations that may escape the designers' thinking and focus less on time horizons and more on the relations and values that emerge. An essential consideration is given to participants in the decisions and actions shaping a future. The participation of multiple interested actors in the proposal and enactment of solutions that will shape their futures –and those similar to them– is increasingly linked to an alternative model of democracy ([Manzini, 2019](#)). Notwithstanding, pluralistic futurity could be challenging for most expert designers, hired as salaried employees to fulfill businesses' objectives. [Manzini \(2015\)](#) points to social innovation as the path designers should follow in changing the world by using their skills to support the production and reproduction of those ideas that make good to the world.

A double challenge may emerge from opening design to the plural futures of multiple social actors. The first comes from assuming the political load of design decisions, and the second comes from the practical reality of a need to institutionalize other design modes. Both challenges are linked to design's ethical and professional situation within the capitalistic system –see, for example, a call for ethical and community institutions in design practice by [Monteiro \(2019\)](#).

Friction may also emerge from the diversity of desires of multiple actors. Democratic efforts ([Manzini, 2019](#)) could mobilize means towards ends to which not everybody agrees. A standard to assess a future is its political viability –or if many would support it. In defining adversarial design, [DiSalvo \(2012, p. 118\)](#) argues that design "*can produce a shift toward action that models alternative presents and possible futures in material and experiential form*". Adversarial design deals with confrontations that come from the deployment of designed objects. As a form of participatory design, the deliberate creation of objects and experiences for the inquiry of confrontations that lead to action acknowledges the need for distributed social action as part of future-making. Distributed social action can be institutionalized by design when dealing with confrontations, which means that futures can never be a static line or pathway but a flexible, ever-changing process of constant context-reading and action. Going from one form of value (commercial and individual gains) to multiple values (communities, families, cultures, and so on) could also be a result of opening futures.

3.2. Thinging Futures or Infrastructures

The shaping and conditioning for future situations are embedded and negotiated between social structures and individual agencies ([Hays, 1994; Fuchs, 2001](#)). Change, the imagination of what is possible (and not) is also subjected to current social structures. Radical transformations require new social arrangements that potentiate individual alternative agencies. The negotiation of social structure and individual agency is mediated through material infrastructures, which conditions what individuals can do and think; or said differently, infrastructures are the materialization of specific social structures. Infrastructures can be related to the idea of Thinging ([Bjögvinsson et al., 2012](#)) as a design process. Thinging implies setting objects that embody the relations of different social actors. Those objects mirror relations and, in turn, allow the participants to take part in the social world. For example, in this line of thought, [Cass et al. \(2018\)](#) conclude that infrastructures and social practices of energy consumption should be attended at their intersections, as their influence is mutual and bidirectional. The embodiment of social relations in objects can also be put under the Marxist concept of reification (see [Gunderson, 2021](#)); for instance, the internet is equated to information, and as a result, it becomes a mandate that everybody becomes a user of the internet.

A prevalent idea about social change, or preferred future situations, is that it can be achieved from two ends of power: 1) from the top of the institutional organization (governments, policies, and legal systems) or 2) from the bottom (organized people, everyday life sphere). In this regard, [Teli et al. \(2020\)](#) have written about how design can mediate the relations between grassroots (bottom-up) and institutional (top-down) driven social change by prioritizing the identification of actors, dialogues, and

alliances. This perspective fits [Hajer & Pelzer's \(2018\)](#) theoretical claims about the emergence of new imaginaries when actors are brought together, and coalitions are formed with artifacts as part of a longer process of staging the future-making. Thus, visual artifacts that speculate about the future can be taken as a form of infrastructure ([Bjögvinsson et al., 2012](#), [Karasti, 2014](#)). Moreover, artifacts create connections for information about the future, as a Thing in itself. However, while it may seem evident that infrastructures –or things– are essential for the conditioning of future outcomes, it must also be contingent that creating things could become a form of closing the future. So infrastructures should also be flexible not to limit the agency of people involved in future-making.

3.3. System Thinking for Interventions

A systemic perspective takes a central role in design for sustainability ([Gaziulusoy & Erdoğan Öztekin, 2019](#)). A system perspective requires acknowledging that future visions are limited in their scope. While a complex system –such as the atmospheric gases– can be modeled in a generalist representation, the whole extent can never be fully apprehended; less possible is it to intervene or control it at each point. Systems thinking in design means finding specific points of a system where interventions can leverage a more significant effect on the rest of the system ([Meadows, 1999](#)). Similarly, [Candy & Kornet \(2019\)](#) suggest using an experiential future ladder as a method to identify future narratives to intervene on or mediate; in a way, this is a mode of system mapping that allows putting futures at different scales.

Design discourses that engage in socio-technical perspectives, such as transition design ([Irwin, 2015](#)), advocate for a mode of future-making based on actively intervening at specific levels or nodes of systems but moving towards a far-reaching vision both in time and scope. Not too differently, [Urry \(2016\)](#) suggested the use of complex system theory as a way to leverage change and futures in social sciences. Using methods for scenario-making and visioning that connect the present and the future while generating pointers for action (for example, see [Gaziulusoy et al., 2013](#)). Whether in qualitatively described patterns or calculated quantitative projections, scenarios represent only a section of a whole that cannot be fully apprehended. Notwithstanding, the decisions taken from future scenarios may have effects on the whole system. It is the designer's role to be aware of the relations and structure of different systems and how different interventions could have a ripple effect.

As part of opening futures, the inclusion of systems thinking provides a way to think of realities as aggregated sets of entities or subsystems that interrelate –[Escobar \(2011\)](#) called for the need to consider interconnectedness and interdependencies. Interventions to change those realities should aim at specific nodes but consider how the effects spread through networks of relation –and power ([Castells, 2021](#)). For example, [Battistoni et al. \(2019\)](#) propose that designers participate in holistic diagnosis by using their communication skills to put the readings of many actors involved into understandable and tangible forms, translated as visualizing or modeling the system.

Systemic thinking is also necessary for the creation of scenarios that focus on specific parts of the system. For example, the case described by [Wangel et al. \(2019\)](#) focuses on social practices as nodes of intervention and imagination about futures, operationalizing energy use scenarios in a way that is closer to the everyday life of people and that in turn can inform policy-makers. In this case, design efforts are task-oriented, in the visual material for the communication of the scenarios, aiming to facilitate the recruitment of people into the practice. The visual artifact is a book that acts as infrastructure between the present and a speculated future. However, it intends systemic change through one specific intervention.

3.4. Expectations in Narratives

Expectations are also an essential aspect of the future because they legitimize, inform and coordinate efforts ([van Lente, 2012](#)). Moreover, expectations are how people anticipate and act regarding what they think could happen; it is a social process of hope and fear ([Kitzinger & Williams, 2005](#)). One powerful characteristic of design is that it can embody and exploit expectations leading to favorable or adverse action against specific futures.

For planners, knowing what users fear or desire is advantageous as they can set the path for a defined future by focusing their discourse on positive aspects and creating hope. Expectations indicate how people assess their thoughts and feelings about specific futures. The acknowledgment of design as a

set of practices that can alter the expectations about a project is what [Tharp & Tharp \(2019\)](#) call discursive design.

Identifying how people interpret a possible outcome in expectations is a material that can nurture design work, particularly in the construction of stories or narratives about how the future might be ([Garduño García & Gaziulusoy, 2021](#)). This kind of approach to futures can be an individual or a collective construction, for example, in science fiction literature and recently in the practices labeled under the concept of design fiction. The use of stories and objects about the future can also take a research orientation in design anthropology ([Galloway & Caudwell, 2018](#)) to gain access to the reasons and relations that objects support or hinder.

The construction of narratives is also known as worldbuilding ([Zaidi, 2019](#)), or the creation of coherent signs and meanings about probable, possible, desired, and undesired futures. In worldbuilding examples, narratives or stories of the future take the form of specific sections of reality while ignoring the rest. Narratives can only represent the views of those who tell them; therefore, plural futures require multiple narratives. The idea that the futures of some actors overshadow the futures of others is also raised in experiential futures and design anthropology. The effects and ethical implications of specific future stories are tested by uncovering them from the perspectives of actors who did not create them. The desired future in a narrative could result in an undesired one for other social actors.

Future narratives are dependent on expectations and conditioned by context. As [Roßmann \(2020\)](#) points, it is the work of those involved in narratives to make others believe that a future is possible enough to act. However, that process of narrating the future should also avoid the colonization ([Watson, 2009](#)) of the future by allowing specific groups and individuals to freely imagine the possibilities of their own ([Ollenburg, 2019](#))

Narratives are usually restricted to specific aspects of a system –everyday life, work– and are not usually seen in connection to the whole. As a result, a widely shared narrative based on its positive expected outcomes may obscure its negative aspects in other systems. For example, the idea of every person owning a cell phone and communicating with their families and friends was hyped during the 1990s. However, it obscured how it would increase individual participation in high energy-consumption practices and other current concerns about the dangers of oversharing personal data – leading, for example, to surveillance capitalism ([Zuboff, 2015](#)).

4. Discussion and Conclusion

Regarding the research question: what concepts could help elucidate the new position of designers when futures are open? Four conceptual approaches for design to open futures were discussed (see figure 2) and summarized as: participation, infrastructure, systems thinking, and expectations. These approaches represent traditions of design and academic discourse that could leverage roles for reframing expert design –beyond the production of artifacts. When put into focus, these four approaches could contribute to the rethinking of the position of expert designers in the current context that requires more flexibility and autonomy (openness) in the evaluation and enactment of alternative futures. Although these approaches imply modes of design that are not complete, they challenge the traditional role of expert design. Instead of offering final solutions, open-ended practices are encouraged, requiring constant reformulation and revisitation. Concurrently, the tension between expert and diffuse design is softened while providing the opportunity to reevaluate expert designers' relevance.

Starting from the conformation of a plurality in participation, one can assume the need to create infrastructures to sustain and nurture the relations and activities of multiple participants and their futures. The task for designers is to understand infrastructures as setting the conditions –pathways– to maintain or disrupt the present situation in observation to future ones. Of course, by establishing an infrastructure, the system's structure is modified, but openness requires that infrastructures are also flexible.

The future is always an incomplete map (a not fully known system), resulting in biased narratives. The work of designers should be to review these narratives under ethical frameworks with as many diverse participants as possible. Describing desirability should not be the primary goal but instead the facilitation of encounters despite differences. The likelihood and the time horizons are only relevant as a prelude to the confrontations that may emerge in defining the narratives and changes expected from multiple participants.

Regarding the complementary questions: first, what are the standards by which designed futures are assessed? Modes of design that are futures-focused and do not fold to a commercial agenda are gaining moment in design, namely critical, speculative, discursive, narrative, experiential futures, and ontological design, among many others. These design modes are different because they don't constrain the future to specific technologies or objects. Instead, they provide flexibility to multiple ways of being and doing while conveying collectively constructed discourses and narratives of plurality. However, inexperienced or uncaring practitioners can fall into the trap of producing images for the sake of images –or gallery objects for the entertainment of the senses as it has already been denounced.

To avoid the traps of innovation for the sake of innovation and gallery objects, designers need to see their work as part of the political enablement of plural action, where futures are not an end but a means. Thus, designers will have to deal with the negative sides of human interaction in conflict and confrontations. Questions about who takes actions and responsibilities and who is invited to a future can be addressed by setting in motion a mode of design preoccupied with the engagement and persistence of future projects over time.

Regarding the second question, what practical implications are there for designers who want to open future-making? Five aspects can be discussed as the focus for opening futures by design:

1. Power issues in the confrontations between different values that emerge in participation.
2. The extent of the effects of design interventions in the whole system.
3. Infrastructures that embody or institutionalize structural relations of inclusion and exclusion.
4. The stories told to support a future, in the confrontations between homogeneity and alterity.
5. The doings of designers in the confrontations between one-time and multiple participations.

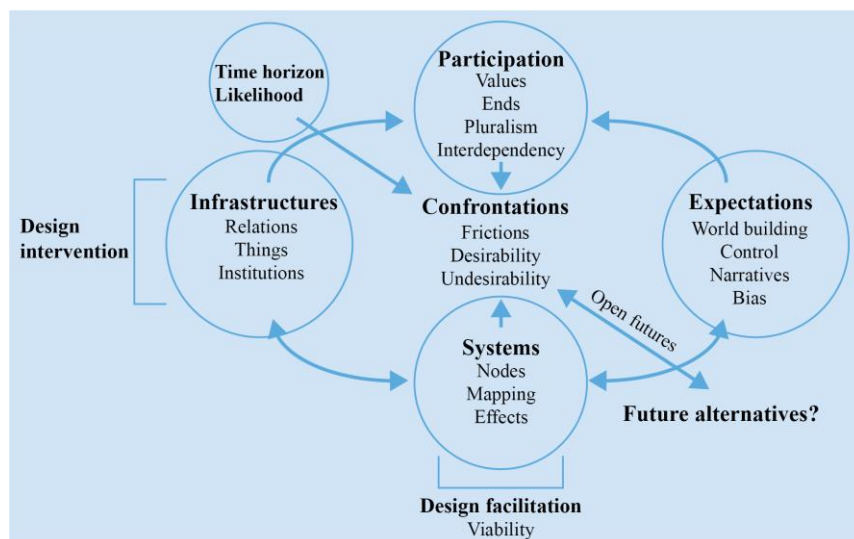


Figure 2. Approaches to facilitate open futures by design

References

- Battistoni, C., Giraldo Nohra, C., Barbero, S. (2019). A Systemic Design Method to Approach Future Complex Scenarios and Research Towards Sustainability: A Holistic Diagnosis Tool. *Sustainability*, 11(16), 4458. <https://doi.org/10.3390/su11164458>
- Bendor, R. (2017). Interaction design for sustainability futures: Towards worldmaking interactions. *Digital technology and sustainability: Engaging the paradox* (pp. 205-216) <https://dx.doi.org/10.4324/9781315465975> Retrieved from www.scopus.com
- Björgvinsson, E., Ehn, P., Hillgren, P. A. (2012). Design things and design thinking: Contemporary participatory design challenges. *Design issues*, 28(3), 101-116.
- Björgvinsson, E., Severson, P. (2014). *Creative class struggles*. In *Making futures: marginal notes on innovation, design, and democracy*. MIT Press.
- Borup, M., Brown, N., Konrad, K., Van Lente, H. (2006). The sociology of expectations in science and technology. *Technology Analysis & Strategic Management*, 18(3-4), 285-298. <https://doi.org/10.1080/09537320600777002>

- Brown, T., Katz, B. (2009). *Change by design: How design thinking can transform organizations and inspire innovation*. HarperCollins Publishers. <https://www.overdrive.com/search?q=1E4441D9-FC50-48D7-B4B3-7A63E0A1A7F1>
- Candy, S., Kornet, K. (2019). Turning Foresight Inside Out: An Introduction to Ethnographic Experiential Futures. *Journal of Futures Studies*, 23(3). [https://doi.org/10.6531/JFS.201903_23\(3\).0002](https://doi.org/10.6531/JFS.201903_23(3).0002)
- Cass, N., Schwanen, T., Shove, E. (2018). Infrastructures, intersections and societal transformations. *Technological Forecasting and Social Change*, 137, 160–167. <https://doi.org/10.1016/j.techfore.2018.07.039>
- Castells, M. (2021). From cities to networks: Power rules. *Journal of Classical Sociology*, 21(3–4), 260–262. <https://doi.org/10.1177/1468795X211022054>
- Costanza-Chock, S. (Ed.). (2020). *Design Practices: "Nothing about Us without Us."* In *Design Justice: Community-Led Practices to Build the Worlds We Need* (p. 0). The MIT Press. <https://doi.org/10.7551/mitpress/12255.003.0006>
- DiSalvo, C. (2012). Adversarial Design as Inquiry and Practice. In his *Adversarial Design*, MIT Press. pp.115-125.
- Dunne, A., Raby, F. (2013). BEYOND RADICAL DESIGN? In *Speculative Everything: Design, Fiction, and Social Dreaming* (pp. 1-10). CAMBRIDGE, MASSACHUSETTS; LONDON, ENGLAND: The MIT Press. <https://dx.doi.org/10.2307/j.ctt9qf7j7.5>
- Escobar, A. (2011). Sustainability: Design for the pluriverse. *Development*, 54(2), 137–140. <https://doi.org/10.1057/dev.2011.28>
- Escobar, A. (2021). Designing as a Futural Praxis for the Healing of the Web of Life. In Fry, T., & Nocek, A. (Eds.). *Design in Crisis: New Worlds, Philosophies and Practices* (1st ed.). Routledge. <https://doi.org/10.4324/9781003021469>
- Fry, T. (2020). *Defuturing: A New Design Philosophy*. Bloomsbury Publishing.
- Fuchs, S. (2001). Beyond Agency. *Sociological Theory*, 19(1), 24–40. <https://doi.org/10.1111/0735-2751.00126>
- Galloway, A., Caudwell, C. (2018). Speculative design as research method: From answers to questions and "staying with the trouble". *Undesign: Critical practices at the intersection of art and design* (pp. 85-96) Retrieved from www.scopus.com
- Garduño García, C., Gaziulusoy, İ. (2021). Designing future experiences of the everyday: Pointers for methodical expansion of sustainability transitions research. *Futures*, 127 <https://dx.doi.org/10.1016/j.futures.2021.102702>
- Gaziulusoy, A. İ., Boyle, C., McDowall, R. (2013). System innovation for sustainability: A systemic double-flow scenario method for companies. *Journal of Cleaner Production*, 45, 104–116. <https://doi.org/10.1016/j.jclepro.2012.05.013>
- Gaziulusoy, İ., Erdoğan Öztekin, E. (2019). Design for Sustainability Transitions: Origins, Attitudes and Future Directions. *Sustainability*, 11(13), 3601. <https://doi.org/10.3390/su11133601>
- Gunderson, R. (2021). Things Are the Way They Are: A Typology of Reification. *Sociological Perspectives*, 64(1), 127–150. <https://doi.org/10.1177/0731121420921891>
- Hajer, M. A., Pelzer, P. (2018). 2050—An Energetic Odyssey: Understanding 'Techniques of Futuring' in the transition towards renewable energy. *Energy Research & Social Science*, 44, 222–231. <https://doi.org/10.1016/j.erss.2018.01.013>
- Hancock, T., Bezold, C. (1994). Possible futures, preferable futures. In *The Healthcare Forum Journal* (Vol. 37, No. 2, pp. 23-29).
- Hays, S. (1994). Structure and Agency and the Sticky Problem of Culture. *Sociological Theory*, 12(1), 57. <https://doi.org/10.2307/202035>
- Interakcije (2016). Speculative Design in the "Real World". Retrieved from: <http://interakcije.net/en/2016/10/10/speculative-design-in-the-real-world/#:~:text=Critics%20of%20the%20currently%20dominant,separation%20from%20the%20real%20world>
- Irwin, T. (2015). Transition design: A proposal for a new area of design practice, study, and research. *Design and Culture*, 7(2), 229–246. <https://dx.doi.org/10.1080/17547075.2015.1051829>
- Jarva, V. (2014). Introduction to narrative for futures studies. *Journal of Futures Studies*, 18(3), 5-26.
- Jones, J. C. (1992). *Design methods*. John Wiley & Sons.
- Julier, G. (2006). From Visual Culture to Design Culture. *Design Issues*, 22(1), 64–76. <https://doi.org/10.1162/074793606775247817>
- Julier, G. (2017). *Economies of design* (1st edition). SAGE Publications.
- Karasti, H. (2014). Infrastructuring in participatory design. In *Proceedings of the 13th Participatory Design Conference: Research Papers-Volume 1* (pp. 141-150).
- Kitalong, K. S. (2000). "You Will": Technology, Magic, and the Cultural Contexts of Technical Communication. *Journal of Business and Technical Communication*, 14(3), 289–314. <https://doi.org/10.1177/105065190001400303>

- Kitzinger, J., Williams, C. (2005). Forecasting science futures: Legitimising hope and calming fears in the embryo stem cell debate. *Social Science & Medicine*, 61(3), 731–740. <https://doi.org/10.1016/j.socscimed.2005.03.018>
- Lefebvre, H. (2004). *Rhythmanalysis Space, Time and Everyday Life*. Continuum. London.
- Maffei, N. P. (2012). "I Have Seen the Future": Norman Bel Geddes' "Futurama" as Immersive Design. *Design and Culture*, 4(1), 79–82. <https://doi.org/10.2752/175470812X13176523285264>
- Manzini, E. (2015). *Design, when everybody designs: An introduction to design for social innovation*. MIT press.
- Manzini, E. (2019). *Politics of the Everyday*. Bloomsbury Visual Arts. Kindle Edition.
- Margolin, V. (2007). Design, the Future and the Human Spirit. *Design Issues*, 23(3), 4–15. <https://doi.org/10.1162/desi.2007.23.3.4>
- Mazé, R. (2019). Politics of Designing Visions of the Future. *Journal of Futures Studies*, 23(3). [https://doi.org/10.6531/JFS.201903_23\(3\).0003](https://doi.org/10.6531/JFS.201903_23(3).0003)
- Meadows, D. H. (1999). Leverage points: Places to intervene in a system. The Sustainability Institute. Retrieved from: http://donellameadows.org/wp-content/userfiles/Leverage_Points.pdf
- Monteiro, M. (2019). *Ruined by Design: How Designers Destroyed the World, and What We Can Do to Fix It*. Mule Books. Kindle Edition.
- Ollenburg, S.A. (2019). A Futures-Design-Process Model for Participatory Futures. *Journal of Futures Studies*, 23(4). [https://doi.org/10.6531/JFS.201906_23\(4\).0006](https://doi.org/10.6531/JFS.201906_23(4).0006)
- Papanek, V. (1988). The Future Isn't What It Used to Be. *Design Issues*, 5(1), 4. <https://doi.org/10.2307/1511555>
- Pschetz, L., Bastian, M., Speed, C. (2016, June 25). Temporal design: Looking at time as social coordination. Design Research Society Conference 2016. <https://doi.org/10.21606/drs.2016.442>
- Roßmann, M. (2020). Vision as make-believe: How narratives and models represent socio-technical futures. *Journal of Responsible Innovation*, 1–24. <https://doi.org/10.1080/23299460.2020.1853395>
- Sardar, Z. (2010). The Namesake: Futures; futures studies; futurology; futuristic; foresight—What's in a name? *Futures*, 42(3), 177–184. <https://doi.org/10.1016/j.futures.2009.11.001>
- Simon, H. A. (1996). *The sciences of the artificial*. MIT Press. <http://ieeexplore.ieee.org/servlet/opac?bknumber=6267338>
- Teli, M., Foth, M., Sciannamblo, M., Anastasiu, I., Lyle, P. (2020). Tales of Institutioning and Commoning: Participatory Design Processes with a Strategic and Tactical Perspective. *Proceedings of the 16th Participatory Design Conference 2020 - Participation(s) Otherwise - Volume 1*, 159–171. <https://doi.org/10.1145/3385010.3385020>
- Tharp, B. M., Tharp, S. M. (2019). *Discursive design: critical, speculative, and alternative things*. MIT Press.
- Tonkinwise, C. (2017). The structure of structural change: Making a habit of being alienated as a designer. *Routledge handbook of sustainable design* (pp. 433-455) <https://dx.doi.org/10.4324/9781315625508> Retrieved from www.scopus.com
- Urry, J. (2016). *What is the future?* Wiley. Kindle Edition
- Valtonen, A. (2020). Approaching Change with and in Design. *She Ji: The Journal of Design, Economics, and Innovation*, 6(4), 505–529. <https://doi.org/10.1016/j.sheji.2020.08.004>
- van Lente, H. (2012). Navigating foresight in a sea of expectations: Lessons from the sociology of expectations. *Technology Analysis & Strategic Management*, 24(8), 769–782. <https://doi.org/10.1080/09537325.2012.715478>
- Wangel, J., Hesselgren, M., Eriksson, E., Broms, L., Kanulf, G., Ljunggren, A. (2019). Vitiden: Transforming a policy-orienting scenario to a practice-oriented energy fiction. *Futures*, 112, 102440. <https://doi.org/10.1016/j.futures.2019.102440>
- Watson, C. (2009). Futures Narratives, Possible Worlds, Big Stories: Causal Layered Analysis and the Problems of Youth. *Sociological Research Online*, 14(5), 231–242. <https://doi.org/10.5153/sro.1969>
- White, D. (2020). Just Transitions/Design for Transitions: Preliminary Notes on a Design Politics for a Green New Deal. *Capitalism Nature Socialism*, 31(2), 20–39. <https://doi.org/10.1080/10455752.2019.1583762>
- Willis, A. M. (2006), Ontological Designing, *Design Philosophy Papers*, 4:2, 69-92, <https://dx.doi.org/10.2752/144871306X13966268131514>
- Willis, A. M. (2021). The Designing of Time. In Fry, T., Nocek, A. (Eds.). *Design in Crisis: New Worlds, Philosophies and Practices* (1st ed.). Routledge. <https://doi.org/10.4324/9781003021469>
- Willis, A.M. (2015). Transition Design: The need to refuse discipline and transcend instrumentalism. *Design Philosophy Papers*, 13(1), 69–74. <https://doi.org/10.1080/14487136.2015.1085687>
- Zaidi, L. (2019). Worldbuilding in Science Fiction, Foresight and Design. *Journal of Futures Studies*, 23(4). [https://doi.org/10.6531/JFS.201906_23\(4\).0003](https://doi.org/10.6531/JFS.201906_23(4).0003)
- Zuboff, S. (2015). Big other: Surveillance Capitalism and the Prospects of an Information Civilization. *Journal of Information Technology*, 30(1), 75–89. <https://doi.org/10.1057/jit.2015.5>