

Designing Foresight and Foresighting Design: Opportunities for Learning and Collaboration via Scenarios

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Abstract

Foresight and design are growing closer together. The two fields are sharing a key tool: scenarios. The piece opens by highlighting the growing relationship between the fields. It compares the generic process frameworks they use. It then reviews the expanding roles of scenarios in design. It concludes by suggesting there is an opportunity for futurists and designers to learn from one another's use of scenarios and that pressure on both fields to expand their scope and capabilities suggest even more collaboration between the two in the future.

Introduction

The concept of anticipation is a widespread phenomenon. As Roberto Poli observes, lots of systems use a predictive model -- life in all its varieties is anticipatory, the brain works in an anticipatory way, society and its structures are anticipatory, even non-living or non-biological systems can be anticipatory.¹ The anticipatory way of thinking is not exclusive to futurists. Designers (and others) share this orientation. Indeed, the relationship between design and foresight is gaining interest within various fields of research around topics such as organizational systems, innovation processes, and design practices.² This paper suggests that there is an increasingly strong relationship between foresight and design, based on their orientation to the future and an increasing sharing of tools used for creating and narrating possible alternative futures. In design as well as foresight, one of the most important tools is scenario building. This paper will focus more on how designers use scenarios in order to provide lessons for futurists -- a future piece could explore what designers can learn from futurists' use of scenarios.

This work builds on a collaboration between a futurist Hines and a designer Zindato. The futurist hosted the designer as a visiting international doctoral student (already an accomplished designer in the field). Zindato's goal was to learn more about how futurists use scenarios, and in the process shared a perspective on how designers use them. The collaboration, thus, was based on each seeking to learn more about how the other used scenarios. Our hypothesis was that futurists tended to emphasize a strategic use of scenarios -- what should we do? -- whereas designers tended to emphasize the use of scenarios for envisioning solutions -- how should we do it? Our observation of the growing collaboration between the fields also led us to hypothesize that these historical emphases were changing, that is, futurists were learning from how designers use scenarios and vice versa. This piece is written primarily from the futurist perspective, given the readership of this journal. It suggests an opportunity for futurists to learn from what designers are doing -- and vice versa -- and it suggests greater collaboration between the two fields in the future.

Growing Relationship between Foresight and Design

The strong relationship between design and the future has been stated several times in the literature of the last fifteen years. Rudkin, for example, focused her attention on the Italian word for design, *progettazione* and on its meaning “to project, to set forth” as a direct bridge between design and foresight:

*“The future, rather, is as yet unformed. It is open to our creative imagination, to our ability to innovate and to design new things, not only open to technological innovations but also to the invention of new human character, new ways of life, new social arrangements, and even new cultural values.”*³

Also Evans in his “Design Futures: An Investigation into the Role of Futures Thinking in Design” highlights that the future is intrinsic to design practices without being specifically or consciously used.⁴ According to these different perspectives and points of view, it is clear that design intervention and its attitude toward the future is motivated by the need for change -- whether the need to identify new consumption patterns or new features for products and services -- and related to emerging trends and the future context and environment.

This section highlights some indicators of the growing relationship between foresight and design. It is exemplary rather than exhaustive. The latter would merit its own piece.

- In the early 2000s the Design for Future Needs (DFFN) Project funded by the European Commission attempted to use design methodologies and processes to help decision-makers foresee and plan policy work in the European Community. It identified more than ninety examples of organizations using future-focused design to help shape decisions.⁵
- The Association of Professional Futurists (APF) has hosted several meetings and professional development sessions on design and foresight in the last several years, including an annual gathering “Design Futures” hosted by the Art Center College of Design in Pasadena, California on March 19-21, 2009.
- The emergence of design fiction, coined by Bruce Sterling in 2005⁶ and popularized by in 2009 by Bleecker⁷; and the related emergence of science fiction prototyping approach popularized by former Intel futurist Brian David Johnson.⁸
- In academia, futurist Stuart Candy’s 2009 doctoral dissertation “The Futures of Everyday Life: Politics and the Design of Experiential Scenarios”⁹ highlighted the political and societal implications raised by both foresight and design activities in introducing the question of participation of users in the building of visions.
- In 2013 Trevor Haldenby’s Master’s Thesis “Bringing the Future to Life – Pervasive Transmedia Scenarios and the World of Worlding” applied design processes for creating “speculative future scenarios.”¹⁰
- In March 2012, the event “Emerge: Artists and Scientists Redesign the Future” hosted by Arizona State University featured a series of design futures workshops.¹¹

- Scenario planning and design thinking were explored together in a November 2014 Oxford Futures Forum meeting.¹²
- In 2015, the APF's Professionalization Task Force mapped out a draft "foresight ecosystem" for the purpose of identifying related fields. It is intended to provide a visual perspective of foresight's potential partners, collaborator, or competitors. Design was identified as one of the related fields and included on the map. A next step is to then strategically evaluate how foresight might pursue relationships with ecosystem partners, such as design.¹³
- The APF Professional Task Force's first version of a foresight competency model identified "designing" as one of six core competencies of futurists. It is used in the sense of designing futures more than the traditional design of products and services, but acknowledges a relationship between foresight and design.¹⁴
- Universities, organizations and consultancies show their interest in future and design. A set of Master Courses were established in different universities globally, with heavy elements on design and futures:
 - A Master's in Strategic Foresight and Innovation at OCAD (Ontario College of Art and Design) influenced by Stuart Candy
 - Critical Design, Design Fiction and Speculative Design, RCA (Royal College of Art, Design Interactions department) influenced by Fiona Raby Anthony Dunne
 - Imagination Lancaster & Design Futures (Lancaster University, Service and Product Design) influenced by Mark Evans
 - Design MBA Program, which includes programs on Design Strategy and on Strategic Foresight (CCA, California College of the Arts)
 - Hawaii Research Center for Futures Studies (University of Hawaii at Manoa, Department of Political Science) by Jim Dator, Stuart Candy, Jake Dunangan and John Sweeney
- The authors have also engaged the subject of foresight and design in previous work.^{15 16}

There seems to be a rise of hybrid design/foresight consulting firms, albeit with design as dominant component, including but not limited to ARUP (<http://www.driversofchange.com/>), Idea Couture (<https://ideacouture.com/icfutures/>), VeryNice (<http://verynice.co/who-we-are/>), IDEO (<https://www.ideo.com/>), Experientia (<http://experientia.com/>), Continuum (<https://www.continuuminnovation.com/>) Frog Design (<http://www.frogdesign.com/>), and the foresight firm Institute for the Future (<http://www.iftf.org/what-we-do/>) is increasingly emphasizing design in its practice.

It is likely that more learning across the field and collaboration is taking place than is captured in the literature and the listing here. Two common themes emerge from the work of the individuals and organizations above relating to foresight work in general, and to scenarios in particular: more experiential and more participatory approaches. The work of Candy and Haldenby, both drawing upon design influences, is particularly illustrative. Candy identified a need for "democratization" and "experientialisation" of futures, and asserted the need for a methodology for "experiential scenarios"

along with a participatory ethos.¹⁷ Haldenby explored the question of how to “engage mass audiences in decision-making processes and experiences simulating different possible futures.”¹⁸ The themes of experiential and participatory are prominent in these works relating to scenarios. Futurist Cornelia Daheim’s recent piece on trends in foresight methods, including but going beyond scenarios, identified “experiential” and “open/crowdsourced” as two of the four trends shaping emerging practice in foresight.¹⁹ It is intended that this piece help chronicle these developments as well as suggesting more formal collaboration moving forward.

Comparing Design and Foresight Frameworks

The growing collaboration noted above makes sense given that generic approaches or frameworks that each field uses to carry out their work is quite similar: both of disciplines start their processes through a strong analysis of the current framework to identify inputs and key elements for developing possible futures; both design and foresight have a central generative phase and a final phase of narration and representation.

The overall processes are similar, but futurists and designers work in different ways. Both fields accommodate a wide range of practices and models. The authors, one a futurist and the other a designer, have selected frameworks that they deem representative, but they do not claim that these frameworks represent consensus choices within their respective fields.

Design thinking approach is a systematic approach to identifying and creatively solving problems. Its two major phases are identifying and solving problems, which are typically carried out in four steps.²⁰

Identifying

- *Discover*: an exploration of customer needs, typically by immersing in their context and gathering and synthesizing data
- *Define*: development of an expanded understanding of the customer and their context, often framed as problem statements

Solving

- *Create*: develop a set of concepts – ideas or prototypes -- that can be shared with the target market for feedback.
- *Evaluate*: more about learning rather than validation

[Insert Figure 1. A Framework for Design Thinking]

Design scenarios emerged in each phase, but with different aims. The multi-faced character of design scenarios emerges in literature. Evans observed that future scenarios are important tools within the design process to inform, validate and endorse design decisions. With the help of forecasting and scenario building techniques, designers provide organizations with a link between the future and strategy.²¹ Scenario building is a way to generate shared visions within a large system of actors. The term scenario is considered by some in design as a synonym for an overall vision of something complex and articulated: a set of possible conditions, or transformations, affecting the domain under

consideration.²² Scenario stories may be seen as a “bridge” between the analytically-oriented planning and the creatively-oriented visioning activities due to their ability to transmit both rational and creative layers of thoughts and beliefs.²³ According to Rasmussen, building a future scenario through stories can be an effective way to integrate imaginations as part of strategy formation and planning, viewing short-term preoccupations from the perspective of long-term objectives.²⁴ That said, it is also evident that designers use scenarios in the different phase within design processes: as a tool for building strategy, for supporting decision making process, generating alternative of concepts, visualizing context, product or services.

In terms of processes, design steps are quite similar to six generic activities or steps of foresight used by the author in teaching foresight at [name of institution]. The approach is deliberately designed to accommodate and incorporate other approaches and is presented as “a” way to do foresight work – not “the” way.²⁵ The six activities can also be grouped into two phases: mapping and influencing. Mapping is aimed at constructing alternative futures and consists of three steps: framing, scanning and forecasting. Influencing is about taking action to shape the future and also consists of three steps: visioning, planning, and acting. The two phases carried out in six steps are summarized below and depicted in Figure 2:²⁶

Mapping

- *Framing* is about identifying and solving the rights problems and scoping out the project.
- *Scanning* includes researching the past and present and identifying the signals of change for the future.
- *Forecasting* involves generating a plausible range of alternative futures, often in the form of scenarios.

Influencing

- *Visioning* includes identifying the implications of the alternative futures and envisioning the preferred future of the client.
- *Planning* is about developing a strategy for carrying out the desire outcomes or vision of the client.
- *Acting* includes carrying out the plans, communicating the results, and potentially developing an ongoing approach to doing foresight work.

[insert Fig 2. A Foresight Framework]

The identifying phase of design, with discovery and defining steps, is similar to the mapping phase of foresight with its framing, scanning, and forecasting steps. Similarly, the solving phase of design with creating and evaluating steps is similar to the influencing phase of foresight with its visioning, planning, and acting steps.

There are similarities and differences in when and how scenarios are used. Indeed, futurists often use scenarios as a bridge from mapping to influencing, much as designers use them to bridge identifying and solving. A difference is that futurists typically use scenario planning methodologies to

guide the entire project –in our approach here, guiding the mapping and visioning phases -- whereas the use of scenarios by designers are more of a modular plug-in within the larger design process. Another difference is that while context and concept generation is the key application of scenarios by designers, futurists may use scenarios for many other potential applications, such as emerging issue identification, strategy, policy analysis, technology assessment, etc.²⁷

Summarizing, scenarios in design and foresight have three main differences:

- In foresight they are applied on a macro-scale (a whole system), they present alternative of futures and are generally presented using storytelling and report.
- In design they are applied on a micro-scale (focused on a specific themes, a product or a services), they present feasible solutions and are materialized by design solution / prototypes or maps.

[insert Fig 3. Differences between scenarios in design and foresight]

Expanding Role of Scenarios in Design

There has not yet been much attention paid to how the fields share specific tools. This paper focuses on how scenarios are used, principally by designers, since readers of this journal are likely to be familiar with how futurists use them (see the following excellent overviews on futurists use of scenarios^{28 29 30 31 32}) There does not appear to be much focused study comparing how designers and futurists use scenarios, though some works note the relationship – for instance a recent paper touched on scenarios for design and scenario planning in an exploration of future product use.³³

Before comparing the use of scenarios by the two fields, a brief review of the evolving role of scenarios in design is in order. Design scenarios are generally associated with advanced design, a branch of design developed within the Design Department of the Politecnico di Milano that emphasizes the intrinsic relationship that exists between design and the construction of visions of the future by focusing on four characteristics: time, space, uncertainty and complexity. Advanced design (ADD) practice works in a design domain characterized by the need to think about products, systems and services suitable for a more distant future – out ten or twenty years – than conventional design. It is consolidating as a practice and increasingly capable of suggesting the direction of innovation efforts from the earliest phase of the development process.³⁴ ADD directs and uses the tools, practices and knowledge of conventional industrial design in long- term projects, or in projects that are addressed to a distant future. Recently, ADD has focused its attention on projects that are not governed by a client in order to search for innovation stimuli that come from extreme situations. It also focuses on continuous innovation processes in which the designer is not the only creative actor of the process and often only helps draw the route of innovation, instead of drawing it out alone.³⁵

The foundations of advanced design are in the old concept cars of the automotive industry in the 1930's. Celi suggests that these "Dream cars" were the embodiment of a possible future scenario –

even if not using that language or following a formal scenario methodology.³⁶ A major advancement in the use of scenarios in design was driven by Apple's successful use of them in their advanced design works. Their famous 1987 scenarios looked ahead about 20 years to envision potential functions of a portable personal computer (see <https://www.youtube.com/watch?v=JIE8xk6RI1>).

Advanced design scenarios are typically aimed at defining the trajectories of innovation to guide the development of new product or service concepts. They typically employ a graphic format, often in the form of maps. This visual or topographical representation of innovation pathways helps the designers to trace the trajectories of potential concepts.³⁷ Advanced design today is consolidating as a practice that is increasingly capable of suggesting the overall direction of innovation.³⁸ This places it closer to foresight, which also uses scenarios as the foundation of project work. Given the long timeframe of advanced design – for example 20 years in the Apple case study -- it makes sense that its use of scenarios is closer to foresight's use of them, where scenarios are used to identify a possible strategy.

The story of designers' use of scenarios suggests that they were initially used primarily as visualization tools, but increasingly came to be used more broadly, similar to how futurists typically use them in scenario planning to guide an entire project. About a decade after the interest in scenarios sparked by Apple, an initial attempt was made by Manzini and Jegou to more formally classify the role of scenarios as design tools. This initial classification grouped scenarios into three categories:³⁹

- *Policy-orienting* that support decision-making
- *Solution-assessing* that relate to specific design proposals
- *Design-orienting* that provide a framework for exploring a range of alternative possibilities

In 2002, Maschi observed that scenarios to that point were primarily used as visualization tools rather than supporting the design driven innovation processes. She saw an opportunity to expand the use of scenarios beyond just visualization tools toward supporting the entire design process – from external and internal communication, business model analysis, strategic planning, concept definition, solution generations, alternatives testing, etc. In other words, she saw an opportunity to use scenarios more like futurists do. She organized scenarios into five different categories:⁴⁰

- *Mission-based scenarios* are used during problem setting to motivate and focus the attention of stakeholders and focus their attention on a common target.
- *Context-based scenarios* use storytelling tools related to a set of alternative contexts.
- *Scope-based scenarios* are envisioning tools to develop a product or a service.
- *Concept-based scenarios* explore the concept of a product or a service.
- *Solution-based scenarios* visualize a specific solution of product or system.

In our view, mission-based and context-based scenarios fit more closely with futurists' historic use of scenarios than the other three types. Mission-based scenarios relate to Pierre Wack's conception of scenarios as tools for influencing the mental model of decision makers' assumptions about how the world works. In his view, key stakeholders must be involved for the process to be effective.⁴¹ By 2005, the use of scenarios in design had evolved to the point that Evans observed that they helped to "inform,

validate, and endorse design decisions.”⁴² Futurists use of context-based scenarios is perhaps best captured by Peter Schwartz: “tools for ordering one’s perceptions about alternative future environments in which today’s decisions might be played out... Scenarios resemble a set of stories, written or spoken, built around carefully constructed plots.”⁴³

Some of the key works in design since 2000 show the evolution from modular or piecemeal application to more strategic use of scenarios common to futurists:

- *Jonas (2001), A Scenario for Design*: Scenario building as central concept in design, shifting the focus from the object to the process of communication and interaction, and covering all phases of design: analysis (analytic scenarios), projection (context scenarios), and synthesis (user scenarios).⁴⁴
- *Carroll (2002), Scenarios and Design Cognition*. Defines scenarios as a family of techniques in which the use of a future system is concretely described; changes the focus of design work from defining system operations to describing how people will use a system to accomplish work tasks and other activities.⁴⁵
- *Irmak (2004), Applying the Futures Studies Approach to Design*. Scenarios help designers to forecast probable conditions and turn these conditions into feedback for actions through the design process for anticipating undesirable circumstances or adding value to the end product.⁴⁶
- *Merholz (2008), Designing Futures*. The role of scenarios is both as a strategic tool and a visualization one. The stories are purposefully diverse that can help the business to face a set of possible futures, and designers represent these tangible futures through different tools: posters, concept videos, prototypes and more.⁴⁷

These selected works show the gradual evolution to an expanded role for scenarios, but it should be kept in mind that the predominant applications were still using scenarios as a tool for creating and visualizing context, products and services and as a common vocabulary between the different stakeholders involved within a process.

Implications

The piece opened up by observing the growing cooperation between design and foresight in recent years. This deepening relationship inspired a closer look at a core tool the fields have been sharing: scenarios. Some highlights from the design literature on the role of design in scenarios suggested that their use by designers was evolving towards the ways that futurists use scenarios. This section covers two sets of implications:

- The differences in how designers use are an opportunity for futurists to learn from.
- The pressure by clients on both disciplines to enlarge their scope and capabilities will drive the two even closer together in the future.

Differences as opportunities for learning

As described earlier, it is no accident that designers and futurists are sharing a key tool. The approaches each takes to their work are very compatible. Shared techniques and tools are rarely considered together, but rather investigated within the respective fields of the practitioners. They are

rarely considered as a common tool shared between the two fields. Hines, for example, developed a taxonomy of scenarios from the foresight side several years prior, without noting the use of scenarios by designers.⁴⁸

The different ways of using scenarios in design and foresight suggest the two fields can borrow from one another. There is an opportunity for mixing and match the different scenarios tools and techniques use by the respective fields. For instance, backcasting and future mapping common to foresight that could be used to a greater extent in the design field. Similarly, foresight could benefit from greater use of the visualization approaches, such as personas and prototypes, for representing scenarios. This piece suggests opportunities for both fields to expand their capabilities by exploring more deeply how each uses scenarios. This piece focuses on the futurist perspective in terms of learning from how designers use scenarios – a future piece could explore what designers could learn from futurists.

Three principal differences are suggested in how futurists and designers use scenarios:

- Strategic versus visual emphasis
- Scenario planning and scenario building
- Multiple ways of using scenarios

1. Strategic Versus Visual Emphasis

The biggest difference in the use of scenarios appears to be greater emphasis on the strategic aspects among futurists and more on visual or visionary aspects among designers. As noted in the introduction about the author's collaboration, Zindato, the designer, after reviewing examples of futurist scenarios, noted the reliance on text and relatively little use of visuals. Hines, the futurist, noted the opposite. Design scenarios were much heavier on the visual aspects, and more oriented on solutions and prototypes than exploring strategic questions. The aim of foresight scenarios is more around the characterization of the larger context as the setting to either explore opportunities or make strategic decisions. Designers use scenarios to assist with focus, that is focusing on solutions, whether as a vision/visualization or prototype.

In foresight, scenarios are used to create a set of alternative futures with the aim to identify a strategy or an action plan for dealing with potential changes. Visualization tools for representing the scenarios are less common than with designers. In design, scenarios are often used to share a vision among the stakeholders involved in a process (client and design team, users and design team, team members with different backgrounds) and they are materialize in many ways, from mapping to sketching to physical prototypes.

2. Scenario Planning and Scenario Building

A second key difference is that foresight scenarios are typically focused on the macroscale and design on the microscale. Hines cited a gap in the scenario planning literature in confusing scenario planning and scenario development. It's suggested that "scenario planning" has more to do with a complete foresight study, where scenario development is concerned more specifically with creating

actual stories about the future. Scenario planning is a far more comprehensive activity, of which scenario development is one aspect.⁴⁹

Among futurists, it may be fair to say that there is more emphasis on the planning aspect than the building one. This paper suggests that designers, on the hand, put a greater emphasis on the building and narrating aspects than the planning. Building tools, aimed specifically at constructing the scenarios; narrating tools are more aimed at telling the story. A recent book of twenty-five articles on the role of design thinking in new product development notes several design tools that can be used for scenarios – personas, customer experience, visualizing, design heuristics, metaphors, mind maps, narrative, stories, and prototypes – but directly mentioned scenarios only briefly. Indeed it is likely that futurists borrow from designers with equally little mention.⁵⁰ For instance, Hines' contribution to the collection noted above included the use of personas, but did not mention their role in design but rather for foresight.⁵¹

Even where design tools are familiar to futurists, it may be interesting to explore in greater depth how designers use them. And there may be some new tools that designers are using that can be added to the futurist tool kit.

3. Multiple Ways to Use Scenarios

Another difference is that designers are more inclined to use multiple scenarios within a project. This is relatively rare among futurists – the closest equivalent in foresight is Pierre Wack and Shell's use of first exploratory and then decision scenarios.^{52 53}

Futurists make greater use of what might be called exploratory scenarios in the mapping phase of foresight. Wack's use of scenarios for exploring the uncertain future context was followed by many, if not most futurists in their use of scenarios. For example, futurist Joseph Coates observed that "scenarios tells [us] about some future state or condition."⁵⁴ Two overview pieces on the scenario literature each noted the exploratory use of scenarios. Van Notten et al. suggested that exploration was a scenario project goal⁵⁵ and Börjesona et al. observed that exploratory scenarios – addressing the question of "what can happen" – were one of three major types of scenarios.⁵⁶ Hines recently observed that scenario projects are often focused on "purely exploratory" questions.⁵⁷

As noted above [see page 12], designers make greater use of concept scenarios, which would fall in the influence phase of foresight. It suggests an opportunity for futurists to make greater use of scenarios in this "influence" phase by using them to visualize proposed opportunities, threats, options or recommendations. In addition, designers use scenarios to portray trajectories or pathways of innovation offer an interesting possibility for futurists to paint a more detailed compelling pathway into the future.

Hines' recent work noted a need for futurists to better link scenarios to their end use, whether strategy, innovation, policy or design.⁵⁸ More recently, he has been looking for tools to make that linkage more explicit, in particular by illuminating the pathways from the present to the possible futures, thus the opportunity scenarios seem worthy of further investigation.

Expanding Scope and Capabilities

The two fields are facing similar pressures to expand their scope and capabilities. Each field in its quest to provide greater value for their clients has expanded its scope of inquiry – foresight moving “forward” into the design space and design moving “backward” into the foresight space.

The move towards the design space by foresight reflects a larger trend of futurists being asked to go downstream, whether strategy, innovation, policy analysis, or design. Futurists have been discussing the pressure from clients to do more than simply point out future opportunities and threats, but to help them do something about them. In process terms, foresight is often at the front end and feeding another process. One might debate whether futurists ought to, or are appropriately qualified in the process they are feeding, but at the very least being literate and capable in those processes seems to be a given in the future. Hines’ previous work suggested a significant shift in foresight work toward “acting” -- taking action or implementing recommendations,⁵⁹ thus leading to an expansion of his core methodology to facilitate the linkage to implementation.⁶⁰ Other have noted the growing links “downstream” as well, using scenarios for innovation,⁶¹ linking scenarios to strategy and innovation,⁶² and Wilkinson recently reported on “ongoing attempts to link the parallel fields of foresight, design, strategy and innovation.”⁶³ And futurists have been working in the design direction. A long list of works and organizations moving toward design began this piece. Some specific examples of how foresight is recognizing the work of designers can be gleaned from a review of award-winning works recognized by the Association of Professional Futurists “Most Significant Futures Works” program in the last two years:

- The Scenario Exploration System involved game design as part of a scenario planning approach.⁶⁴
- The Thing from the Future is an imagination game using different types of cards to inspire player to design objects from a range of scenarios.⁶⁵
- Dubai’s “Museum of the Future” seeks to engage visitors with future- oriented objects and artifacts.⁶⁶
- Byologic/Zed.TO is a cross-platform narrative approach to scenarios that involved immersive, crowd-sources experiences.⁶⁷

It is interesting to note that the APF’s 2003 “Futures of Futures” scenario project mapping out the future of the field identified a scenario called “Lifeboat” that suggested that futures tools would increasingly be adopted by other fields. There are a couple of ways to interpret this: the “positive” view is this means success in that foresight is spreading, and the “negative,” which the Lifeboat scenario emphasized is that futurists were not in demand and that while foresight tools were used more widely, they were often used poorly.⁶⁸ A response to the Lifeboat scenario, rather than hunkering down and isolating, is to look for opportunities to work together with other fields and share tools in a mutually beneficial way. This piece argues that design and designers are ideal partners.

Notes

¹ Roberto Poli, "The Many Aspects of Anticipation," *Foresight* 12, no. 3 (2010): 7–17.

² Manuela Celi, "Design & Future Studies: A Matter of Responsibility," In Celi M., Zindato D., *Narrating Distant Future: Lessons From Scenarios And Prototype Evolution*. Proceedings, 5th Intl Forum of Design as a Process: The Shapes of the Future as the Front End of Design Driven Innovation (September 18-20 2014, Guadalajara, Mexico).

³ Jennifer Rudkin, *Navigating through Trends and Anticipation: An Advanced Design Perspective on Reframing Practices*, PhD Thesis (Milan: Politecnico di Milano, 2014): 15.

⁴ Martyn Evans, "Trends Forecasting for Design Futures," *European Academy of Design Conference*, April 2003, (Barcelona: University of Barcelona, 2003).

⁵ European Commission, *Design for Future Needs* (Full Report). Accessed June 15, 2005 from http://www.dffn.org/researchdocuments/dffn_fullreport.pdf.

⁶ Bruce Sterling, *Shaping Things* (Cambridge, MA: MIT Press, 2005).

⁷ Julian Bleecker, *Design Fiction: A Short Essay on Design, Science, Fact and Fiction* (Near Future Laboratory, March 2009).

⁸ Brian David Johnson, *Science Fiction Prototyping: Designing the Future with Science Fiction* (San Rafael: Morgan & Claypool, 2011).

⁹ Stuart Candy, *The Futures of Everyday Life: Politics and the Design of Experiential Scenarios*. PhD Thesis (University of Hawaii, Manoa August 2010).

¹⁰ Trevor Haldenby, *Bringing the Future to Life: Pervasive Transmedia Scenarios and the World of Worlding*, Master's thesis (Toronto: OCAD University, 2013). Accessed May 13, 2016 from <https://www.scribd.com/doc/164913914/Bringing-the-Future-toLife-Pervasive-Transmedia-Scenarios-and-the-World-of-Worlding>

¹¹ Cynthia Selin, Guest Editor, "Special Section on Mediating Futures," *Futures* 70 (June 2015): 1-86.

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- ¹² Thomas J. Chermack, Cynthia Selin, Rafael Ramirez & Yasser Bhatti, Guest Editors, "Special Issue: Scenarios and Design," *Futures* 74 (November 2015): 1-106.
- ¹³ Andy Hines, "Foresight Competency Model & Ecosystem Map, Presentation to APF Town Hall, Washington DC, July 23, 2016.
- ¹⁴ U.S. Department of Labor, Employment and Training Administration, "Futurist Industry Association Develops Foresight Competency Model," *Competency Models In Action* (May 2016). Accessed June 6, 2015 from http://www.careeronestop.org/competencymodel/info_documents/futurist-casesummary.pdf
- ¹⁵ Andy Hines, "Future-Friendly Design: Designing for and with Future Consumers," In Michael Luchs, Scott Swann & Abbie Griffin (Editors), *Design Thinking: New Product Development Essentials from the PDMA* (Hoboken, NJ: Wiley, 2015): 333-348.
- ¹⁶ Danila Zindato, *Design Scenarios: Approaches and Tools for Building the Future within Design Processes*, PhD Dissertation (Milan: Politecnico di Milano, 2016)
- ¹⁷ Stuart Candy, *The Futures of Everyday Life: Politics and the Design of Experiential Scenarios*. PhD Thesis (University of Hawaii, Manoa August 2010).
- ¹⁸ Trevor Haldenby, *Bringing the Future to Life: Pervasive Transmedia Scenarios and the World of Worlding*, Master's thesis (Toronto: OCAD University, 2013). Accessed May 13, 2016 from <https://www.scribd.com/doc/164913914/Bringing-the-Future-toLife-Pervasive-Transmedia-Scenarios-and-the-World-of-Worlding>
- ¹⁹ Cornelia Daheim & Sven Hirsch, "Emerging Practices in Foresight and their Use in STI Policy," *STI Policy Review* 6, no. 2 (2015): 27-53.
- ²⁰ Micheal Luchs, "A Brief Introduction to Design Thinking," In Michael Luchs, K. Scott Swan & Abbie Griffin, *Design Thinking: New Product Development Essentials from the PDMA* (Hoboken, NJ: Wiley, 2016).

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