Hybrid processes for a new era of strategic foresight

Jean Paul Pinto and Javier Medina

Abstract

Purpose – *This paper aims to propose a new strategic foresight process that combines aspects from science fiction, speculative design and tools linked to organizational processes, first, to generate potential new services and products and, second, to reduce problems associated with the construction of low-impact and irrelevant scenarios for decision-making processes. As a new proposal, it invites reflection and debate.*

Design/methodology/approach – *After reviewing the literature on the key concepts that represent the essence of strategic foresight, as well as the traditional processes to reflect on the future, a proposal for a new hybrid, integrative foresight process that allows moving from imagination to the materialization of scenarios will be presented.*

Findings – *The new hybrid process makes evident the need to articulate strategic foresight with other areas of knowledge and management tools to build scenarios with greater impact on decision-making and greater added value from strategic foresight to organizational processes.*

Originality/value – *The proposed integrative model articulates tools that already exist, but the originality of the proposal lies in that there are no models that integrate science fiction, speculative design, and other organizational tools in a single process.*

Keywords Science fiction, Black swans, Conjectures, Strategic conversation, Latent needs, Speculative design, Ruptures

Paper type Research paper

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1. Introduction

Since the first use of the word prospective in 1957, where Berger (2008a) proclaimed a change of attitude in human beings with the aim of making them more interested in looking forwards and less backwards (retrospective attitude), several key concepts have been associated with futures studies: conjectures (De Jouvenel, 1966; Masini, 2013), strategic conversation (Van der Heijden, 2009), liberty (De Jouvenel, 2004), effective actions (Bell, 2012), desire for change (Cagnin & Loveridge, 2011; Hamel & Prahalad, 2010), prospective anthropology (Berger, 2008d), democratization of strategic foresight (Medina *et al.*, 2014), analysis of consequences and adverse events (Ahlqvist *et al.*, 2015; Taleb, 2008a).

These concepts have been collected in various foresight processes worldwide, allowing to structure a prospective reflection that has made possible the identification of scenarios (probable, undesirable, desirable, of rupture) and of strategies that allow to face them. Among these processes we can point out those developed by different futurists (De Jouvenel, 2004; Godet, 2007b; Miklos & Arroyo, 2012; Miles & Keenan, 2020; Schwartz, 1995).

Even though there are several elements that should characterize strategic foresight studies and that have been considered by the different processes identified above, there are shortcomings in terms of the final impact of the scenarios generated and their capacity to influence decision-making.

The article first introduces a literature review of the major concepts that synthesize the essence of strategic foresight in Section 2; secondly, it describes a series of processes that allow structuring a reflection on the future, then it presents the views of different authors who have pointed out the shortcomings of these processes in subsection 2.2. Afterwards, in Section 3, a methodological approach is presented highlighting the relationships among strategic foresight and science fiction in subsection 4.1; strategic foresight and design in subsection 4.2; and strategic foresight and tools for the generation of new markets in subsection 4.3. This new integral approach enables us to propose a hybrid Foresight process, where all these elements converge, a process that is detailed and contrasted on the basis of the outlined concepts; finally, the paper closes with a discussion in Section 5 on the proposed model and the elements that would configure a new way of doing strategic foresight, more complete and richer than the strategic foresight characterized by traditional processes.

2. Literature review

2.1 Concepts that characterize the essence of strategic foresight

Confronted with the rapid changes currently being experienced, organizations must seek new ways to understand reality and to conjecture about the future; to experiment with new methodologies and rigorous tools, which allow for a better exploration of possible futures, even if this implies being critiqued by other scholars (Masini, 2013) and opening a space where the free market of conjectures can operate (De Jouvenel, 1966).

There can be no objective knowledge of the future, but simply an ability to conjecture about it (De Jouvenel, 1966; Masini, 2013). Thus, the most prudent approach is to use the word conjecture in absolute contrast to the word knowledge.

On the other hand, it is important to consider the analysis of the consequences of the scenarios (De Jouvenel, 1966). In this sense, it could be risky to set aside eventualities of dire consequences, just because the event seems very unlikely. In this regard, it is important to point out that, in ancient times, probabilities were considered as a subjective way of measuring beliefs (Taleb, 2008b). In view of this, Taleb suggests transferring the time invested in calculating the probabilities of future events to the analysis of the consequences of the occurrence of such events.

Accordingly, an organization requires a manager who asks questions, challenges convictions, and suggests new ideas: managers must learn the art of questioning (Mintzberg et al., 2013). In times of uncertainty, planners are required to stimulate creative strategic thinking by posing a series of wicked questions.

Scenario building is first and foremost a process of conversation among the people involved, which enables an organization to strengthen its strategic skills. The conversation represents a space where the people of an organization can experience and consider the proposed scenarios, which depict different perceptions of a given situation, and on the basis of these decide what should be done and what they wish to do (Van der Heijden, 2009). It is key to develop scenarios that can be discussed in groups, with the purpose of creating a common language that facilitates the execution of actions, once one of these scenarios has materialized (Van der Heijden and Schwartz, 2001).

A study of the future requires the implementation of a prospective anthropology, which involves studying the aspirations of human beings, with the aim of being able to manifest them better and adapt them to the requirements of a world in which human beings are about to live. Even though the means abound, the ends are not clear and the needs are not expressed frankly; hence the imperative to develop a prospective anthropology that takes human desires out of their state of latency with respect to the future (Berger, 2008c). The latent refers to incomplete present conditions, which are in the process of maturation

(Poli, 2010). In this sense, there could be points of tension between what the consumer wants or needs and what is currently available (Mason *et al.*, 2015).

The process of reflection on the future should give less importance to possible limitations or conditions, so that freedom becomes more important (Hekkert & van Dijk, 2011). In a sense, free will, non-determination, and uncertainty constitute opportunities when imagining and materializing new things. To this must be added the need to suspend the belief (disbelief) that something is impossible or that it cannot become reality (Taleb, 2008a; Zaidi, 2018). The future is a mental space of liberty (De Jouvenel, 2004).

Accordingly, it is important to strengthen the democratizing function of strategic foresight to obtain collective and citizen ownership of the future; civil society is the one that defines the options and then becomes the designer and builder of its own future. strategic foresight needs to establish democratic spaces to build meaning and to mobilize collective intelligence to think, debate about, and shape the future (Medina *et al.*, 2014).

The following eight points are drawn from the literature reviewed. They synthesize the eight key features that encompass the essence of strategic foresight:

2.2 Processes and methodologies for the construction of prospective scenarios

Schwartz (1995) considers that scenario planning is, above all, an interactive process, fruit of imagination, where creativity, intuition and perspicacity prevail. The author suggests developing the following stages:

- identify the core question of the study;
- identify the key variables that affect the identified problem;
- identify macro trends affecting the study, including ruptures;
- rank variables and trends by order of importance and level of uncertainty;
- select the axes on which the variables and trends with the greatest impact and uncertainty will be placed;
- narrate the scenarios with their corresponding logics;
- relate strategy to scenarios; and
- define some indicators to verify the fulfillment of this or that scenario.

Conversely, De Jouvenel (2004) considers that a foresight process begins with the definition of the problem and the selection of the study's horizon; to then move on to the construction of the system and the identification of the key variables; this will have to be complemented later with the compilation of information about such variables, which will allow for the construction of diverse future hypotheses; moving on with the construction of scenarios and ending with the identification of strategic options.

Meanwhile, Godet (2007b) considers that there is no one method of scenario building but a plethora of approaches to building scenarios. We could rather speak of a process with very precise stages that are linked in a logical way (system analysis, retrospective, actor analysis, scenario building).

Likewise, a Foresight process involves analyzing trends, identifying risks and uncertainties, analyzing the actors' games, establishing possible ruptures and future-carrying events, building scenarios (with coherent hypotheses), defining strategic options and determining the consequences of these strategic options according to the materialization of this or that scenario (Stoffaes, 2001).

As for Miklos and Arroyo (2012), they contend that a prospective study implies knowing the possible futures (construction of future images and social dialogue of futures), to then move

on to a design stage where decisions will be made based on the scenario that has been selected as the desired one, and to conclude with a construction stage where commitments will be generated among the actors and a monitoring and an assessment phase will be carried out (continuous improvement, learning, feedback).

Ramos (2017) suggests the development of the anticipatory experimentation method, which first explores assumptions and images about the future; this also implies learning from future-bearing facts (weak signals), trends and emerging events (emerging issues). Afterward, an integrated vision can be constructed based on this new knowledge (understanding) of the future. In the third stage, ideas, models and prototypes based on the new vision are conceptualized using creative techniques. The aim is to generate a connection between the vision and the prototypes. After that, real experiments must be carried out based on the prototypes generated.

On the other hand, metaphors can be used as tools for the construction of alternative futures; however, they can be more difficult to understand, especially because of cultural or linguistic aspects. The use of metaphors is suggested when time is limited, the number of participants is large, and it is important to reach consensus (Kuusi et al., 2016). Metaphors create new personal and strategic paths. Not only do they describe reality, but they constitute reality itself. They are fundamental in generating disruptions in the present, unblocking alternatives and creating new futures. Metaphors are used so that people can adopt new perspectives; they can represent an opportunity to critique current ways of thinking and motivate dialogue (Inayatullah et al., 2016).

The processes and methods described above demonstrate the need for a Foresight process to meet several requirements: identify key questions (Schwartz, 1995), identify risks (Stoffaes, 2001), analyze consequences (Stoffaes, 2001), build social dialogue (Inayatullah et al., 2016; Miklos and Arroyo, 2012) and generate spaces for reflection and critical analysis of what is lived in the present (Concheiro, 2016; Inayatullah et al., 2016).

This would imply that Foresight should assume an attitude of seeking multiple collaborations, in order to generate inter-, multi- and trans-disciplinary work, which would mean leading to a situation characterized by "polyamories," since it does not remain exclusively in its own disciplinary boundaries (Van Leemput, 2019).

In this sense, narratology is the study of the structure of events, connections and causes that can lead to a literary form, which is important, as human beings are essentially storytellers (Burnam-Fink, 2015). As such, we organize and give meaning to our lives in terms of narratives. Moreover, as Graham and Mehmood state (2014, p. 87), "by combining realistic characters and social milieus with novel technology, science fiction can engage multiple ways of thinking, and draw out underlying values and sites of conflict and confusion."
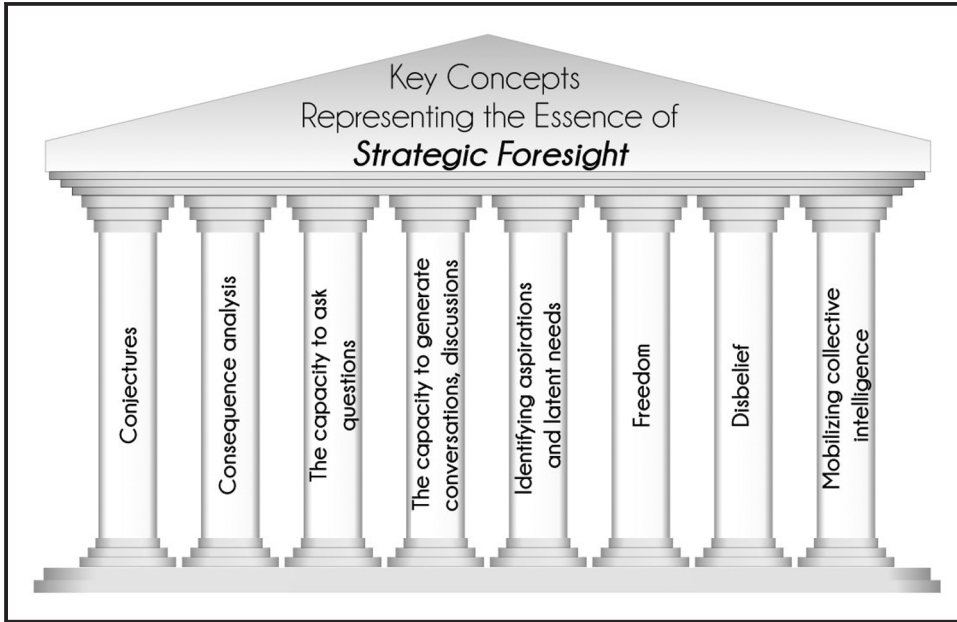
It is worth mentioning that from the seven analyzed models there are still in Figure 1 some elements that are not readily present and, thus, need to be strengthen, namely, better conjecture; strengthen liberty when imagining the future; better identify latent hopes and needs (prospective anthropology); set aside preconceived ideas and beliefs (disbelief); and mobilize greater collective intelligence. It would, therefore, be pertinent to develop processes that also incorporate these aspects, which are not dealt with by the traditional way of carrying out a prospective study.

3. Methodological approach

3.1 Research design

A qualitative inductive approach (Patton, 2002) was used as the research purposes could best be met through exploratory, open inquiry. The study focused on analyzing existing literature on whether there are intersections between Foresight and other areas of

Figure 1 Key concepts representing the essence of strategic foresight

Key Concepts
Representing the Essence of
Strategic Foresight

Conjectures | Consequence analysis | The capacity to ask questions | The capacity to generate conversations, discussions | Identifying aspirations and latent needs | Freedom | Disbelief | Mobilizing collective intelligence

Table 1 Analyzed literature

Text type	Quantity
Academic literature	
Academic articles	26
Books	23
Book sections	16
Gray literature	
Websites	5
Total	70

knowledge both to enrich the processes of building images and visions of the future, and to facilitate decision-making. To that end, several international books, peer-reviewed articles and gray literature (blogs, reports and websites) were reviewed using various descriptors, namely, Foresight & Innovation, Foresight & Science Fiction, Foresight & Design, Foresight & Design Fiction, Foresight & Blue Ocean.

3.2 Data collection

A literature review was conducted to pinpoint, on the one hand, the key elements that make up the essence of strategic foresight and, on the other, to identify the shortcomings found when imagining and materializing the future (Table 1).

3.3 Data analysis

"A rigorous process of analytic induction that includes both within- and across-case comparisons" (Ayres, 2008, p. 867) of the literature reviewed was carried out. Emergent themes addressing the research purposes were coded and used as the themes to structure the integrative, hybrid model. Every text was perused and coded individually by each

researcher and then compared and discussed to ensure inter-rater reliability. Any discrepancies in the thematic coding and analysis were debated until a reasonable understanding and decision were achieved.

4. Results

4.1 Relationships between foresight and science fiction

There is a two-way pollination between prospective studies and science fiction – on the one hand, science fiction writers are nourished by current trends and, on the other, engineers and scientists are nourished by the uses and evolutions that are given to these trends in the fiction books and films, to later create real products and services (Bell *et al.*, 2013). This would mean that science fiction produces an inspirational phenomenon that is useful when generating future products and services. The pollination between science fiction and prospective studies can be evidenced in several books, films and series, namely, *Blade Runner*, *Minority Report*, *Black Mirror* and *Do Androids Dreams of Electric Sheep?*

Science fiction, through its narratives, enables closing the gap between images of futures and necessary actions to materialize the said futures (Von Stackelberg & McDowell, 2015). In this sense, science fiction prototyping leads to the creation of detailed concepts about what seems uncertain, with the objective of making it possible for planners, public policy managers, and project managers to use them routinely (Corsi, 2015).

This cross-fertilization between prospective studies and science fiction makes it possible for the actors of an innovation process to interact among each other, generating spaces where engineers can think more humanely about the future technologies they are developing and are able to connect with the imagination of the service manufacturers and potential users (Burnam-Fink, 2015). Between them a conversation will be established on the possible implications and effects of these innovations in the future, which will be enriched by the description of the affective and emotional states of fictional characters that are impacted by the new services or the materialized products (Draudt *et al.*, 2015).

Therefore, when scenarios are structured under a science fiction process, this process is perfected through more creative inputs, greater detail, multiplication of alerts, deep reflection, extensive criticism, and broad commitment (towards action) (Bina *et al.*, 2017). This leads to a holistic awareness of the future (Lombardo, 2015), which facilitates the materialization of the vision of the future in a project that can be quickly materialized by engineers, product, or service developers and end users.

Science Fiction is usually inspired by advances in science and contemporary thought, with which very detailed stories about the future are built. These stories have a greater impact (they are more engaging and realistic) than an abstract theory, a static image, or a statistical prediction because they include sensory and dramatic aspects, actions and consequences, providing a vivid presence and energy to the vision of the future. Thanks to science fiction, the future can be lived and felt at a deeper and more intimate level (Lombardo, 2015).

Indeed, the gray literature evidences the importance of Science Fiction when imagining and inspiring the creation of new products and services.

The anticipations and prophecies materialized from Science Fiction have caused the gap between science fiction and real science is disappearing. In 2017, Pricewaterhouse Coopers published a document to encourage the use of Science Fiction when exploring innovations in business; that same year, The Harvard Business Review argued that business leaders needed to read more Science Fiction (Merchant, 2018).

In this regard, companies such as Google, Microsoft, and Apple have linked their software developers and research departments to science fiction writers (Akkawi, 2018; Gibbs, 2017; Gunn, 2014). The designers of the iPhone and Kindle have indicated that they have been inspired by Science Fiction stories. For example, the Kindle design team has remarked that it was inspired by Neal Stephenson's book The Diamond Age (Merchant, 2018); Boeing, Nike, Ford, and Intel are also hiring people or organizations that make prototypes or projections for the future (Serpell, 2019).

Science Fiction, through future narratives, can generate and grant human life drama, color, sense of action, direction, and possibilities regarding the future; it inspires and is a way to approach and create the future; for example, it is known that Science Fiction has stimulated the inventive imagination of many of its readers, provoking developments in real life (Lombardo, 2017).

In short, design could assist in a Foresight process with the following characteristics which are in harmony with Figure 1 and that which exhibits the linkages between Speculative Design and Foresight:

4.2 Relationships between foresight and design

In the last decade, the construction of futures and design has grown into a more intimate and collaborative relationship ("love affair"). On the one hand, designers have become more sensitive to the future, integrating long-term thinking and strategic foresight tools into their work; in the meanwhile, prospectivists are increasingly involved in prototyping themes and preparing future experiences using the design (Candy & Dunagan, 2017).

This would imply that Foresight should assume an attitude of seeking multiple collaborations, to generate inter-, multi-, and transdisciplinary work, which would mean leading to a situation characterized by "polyamories," since it does not remain exclusively in its own disciplinary boundaries (Van Leemput, 2019).

A cross-pollination work is evidenced; a work of symbiosis that allows one to benefit from the full potential of the other to generate a more complete final product. This shows that strategic foresight studies are starting to look to other areas to generate scenarios of greater impact and more effectiveness in terms of generating actions and projects to modify future events (Candy & Dunagan, 2017).

In the case of design fiction, it has given a speculative perspective to traditional design, prioritizing thinking and doing. It is a bridge between facts and imagination – and this can be applied to both near futures and more distant relationships – related to design and fiction. This implies two possibilities: to fiction through design (materializing through design) or to design with fiction (fiction helps design). In this sense, the fictitious has much to offer to the practice of design (inspiring, guiding) and vice versa (design helps materialize the fictitious). On the other hand, design fiction is related to other trends such as critical, speculative, and discursive design (Hales, 2013).

In short, design could assist in a Foresight process with the following characteristics which are in harmony with Figure 1 and that which exhibits the linkages between Speculative Design and Foresight.

4.3 Relationships between strategic foresight and processes to create new markets

The organizations that make the difference are those that have the capacity to imagine products and services in sectors that do not yet exist; wasting little time worrying about the position they occupy in existing markets, given that they are focused on creating new markets. These organizations have little concern for the conservation of the past and have rather begun the path to the conquest of the future (Chan Kim & Mauborgne, 2015, 2018; Godet, 2007a). Visionary companies are interested in creating markets or industries

(Holstius & Malaska, 2004). That is why it is important to use tools that allow the identification of latent needs or dissatisfactions with respect to current offers (Giget, 1998).

In this sense, the dogmatic belief that a group of experts or technicians can better know the expectations and needs of citizens, as a result of their knowledge and access to privileged information is being undermined; methodologies based on expert opinion (simulations, Delphi) are inadequate to meet the requirements of empathy that public or private organizations need to meet the needs of citizens and clients (Bas, 2014). Therefore, the inclusion of users will facilitate the processes of appropriation of the process, making it easier for them to become agents of change, motivating them to act to materialize the desired scenario. In this respect, empathy and value maps could be of great help (Osterwalder *et al.*, 2014; Osterwalder & Pigneur, 2010).

Companies are obsessed with achieving visions that are beyond their current capabilities and resources; this is called strategic intent (Hamel & Prahalad, 2010). In this regard, it is important to generate the company's capacity to renew all its competences and to value them through a creative offer of products and services (Giget, 1998).

In short, business management tools could assist in a Foresight process contributing the following characteristics which are in harmony with Figure 1 and that which exhibits the linkages between management tools and Foresight:

4.4 Proposed hybrid model

Based on the features identified above, it can be argued that it is necessary to structure a Foresight process that considers the following characteristics, which have been previously identified in the literature review and which are exhibited in Figures 1, 2, 3, 4 and 5:

Considering these features, we propose the following prospective model, focused on the creation of potential new services and products, which merges elements of science fiction, speculative design and other tools for the creation of new markets. The 14 identified elements are immersed in the four phases of the model, thus complying with the characteristics that this process should have, in accordance with the results evidenced in the literature reviewed Figure 6.

A brief rationale of the names of the phases:

■ The first phase is called *Discover* because it seeks to identify the latent needs of the key actors of the problem under analysis and to establish empathy with them.

■ The second one is called *Imagination* because it is necessary to structure SF narrations where possible future events are freely described, where the consequences of what could happen are detailed; that is to say, it is conjectured about what could happen in the future.

■ The third phase is called *Design* because it seeks to make futures concrete to materialize them, and to do so, designs can be developed.

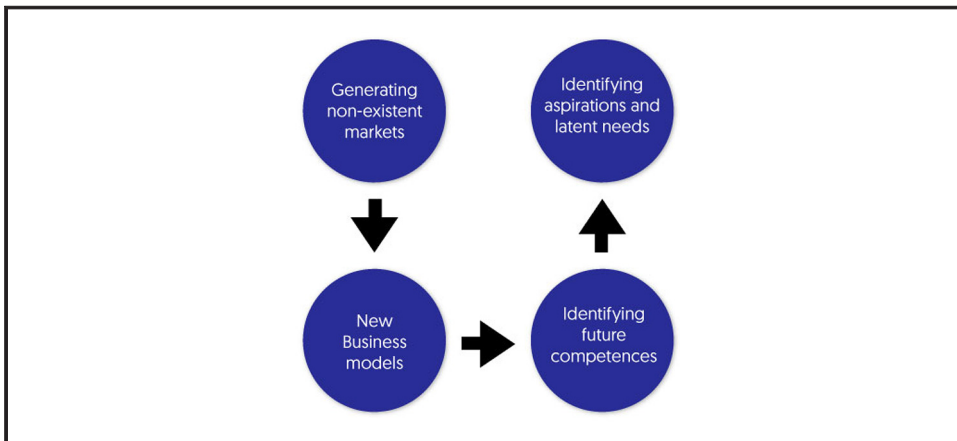**Figure 2** Relevance of science fiction in debating, discussing and imagining the future
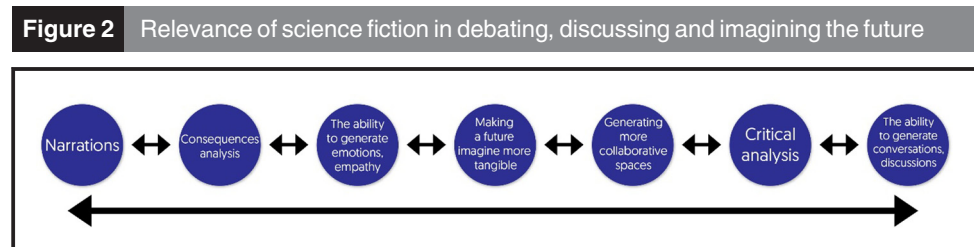
Figure 3 Contribution of speculative design to the materialization of the future
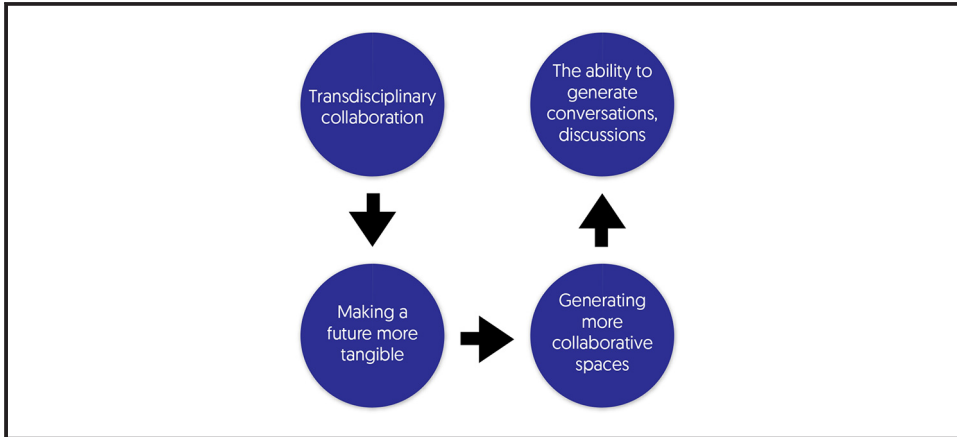
Figure 4 Contribution of management tools for the construction of the future


■ The fourth phase involves developing new markets and establishing the future strategy of the company; therefore, it has been given the name *Act Strategically*, which involves moving from a strategic foresight to a more operational one.

Below is an outline with the 14 characteristics evidenced in the literature reviewed, disaggregated by phase, and pinpointing their associated authors Figure 7.

This process complies with the 14 key characteristics that represent the essence of Foresight and that were specified in Figure 1. Below the way in which these fundamental principles are collected in their different stages is detailed.

The first stage of the process (Discover) seeks to reinforce the *participation* of a greater number of actors (employees, suppliers, distributors, etc.) and especially of future users of the new service or product to be created. This stage also seeks to generate awareness towards change and better detect the *latent needs* of these users. To meet these conditions, it is proposed to use empathy and value maps (Osterwalder *et al.*, 2014) and prospective matrices of traditional processes that analyze trends, ruptures, black swans, and weak signals (Durance, 2014; Massé, 2008; Taleb, 2008a; Wilkinson, 2017).
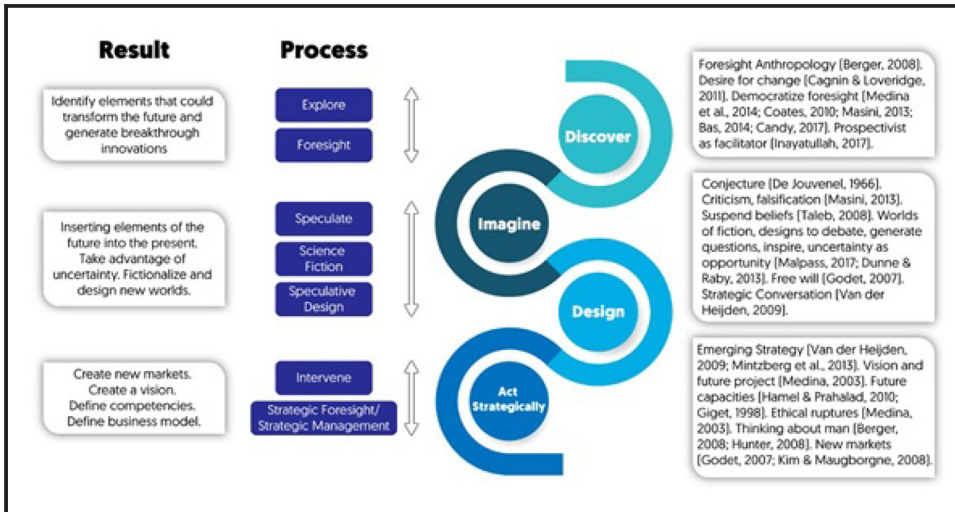
Figure 5 Contribution or added value of science fiction, speculative design and management tools for the imagination and materialization of the future
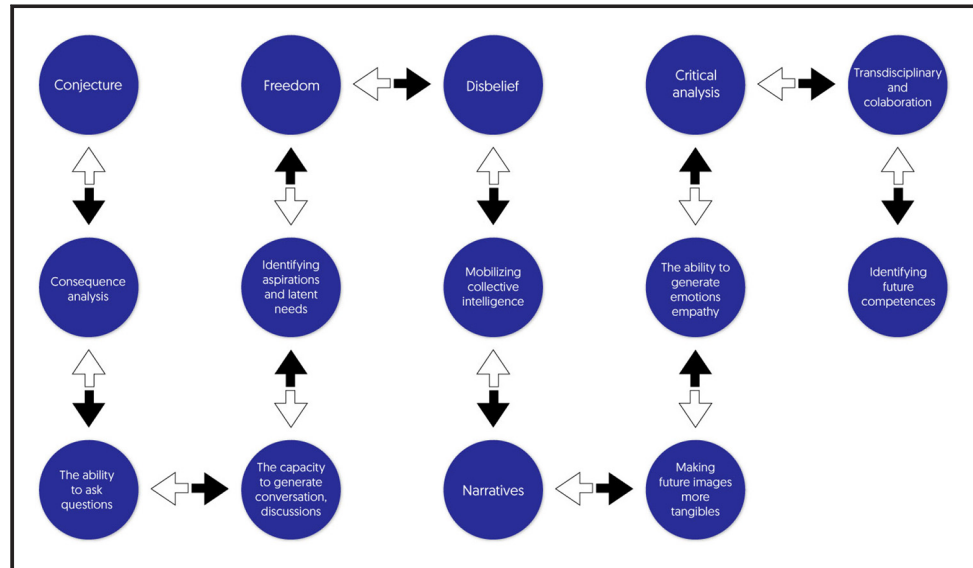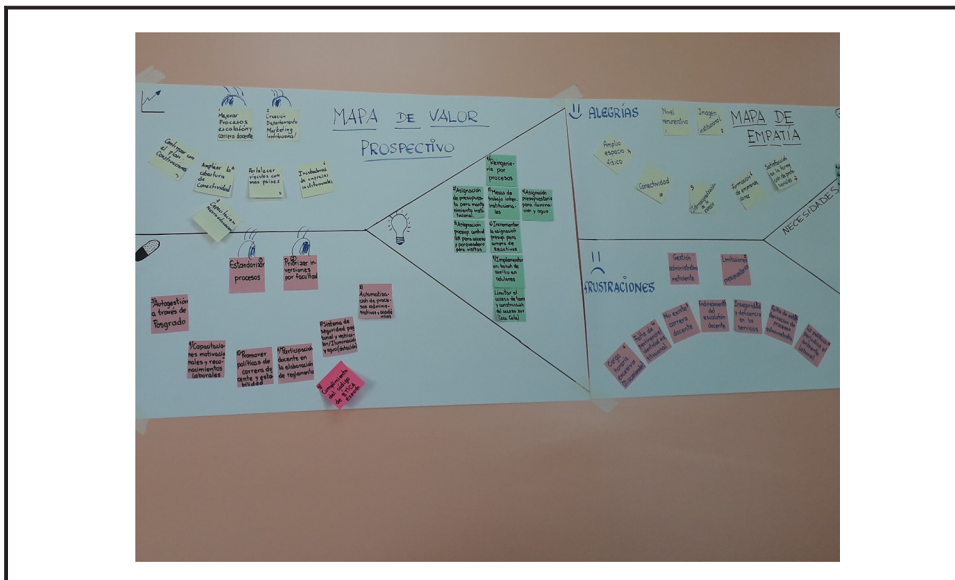

Figure 6 Process for imagining and materializing the future
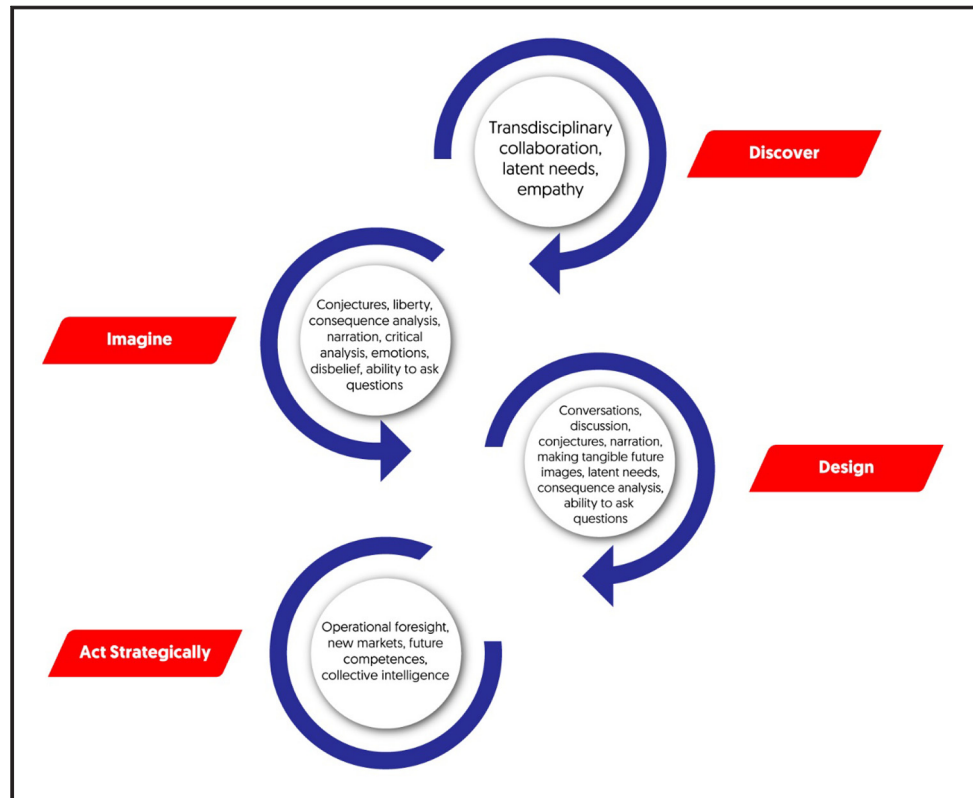
Figure 7   Hybrid foresight process with a focus on innovation

Figure 8   Empathy and value maps Phase I, Project Foresight for Higher Education 2030

This phase has been developed for several public organizations. First, some maps worked in the context of the Project Foresight for Higher Education 2030, in Riobamba, Ecuador; and, second, some products in the imagination and materialization of the Center for Government and Public Administration of the Instituto de Altos Estudios Nacionales (IAEN), in Quito, Ecuador, are showcased in Figures 8 and 9.

In the second stage (Imagine), the capacity to *conjecture* about the future is strengthened with the help of science fiction guidelines that allow us to imagine the future with *greater freedom*, to push against existing knowledge boundaries and competences; to identify the positive and negative *consequences* of future actions and *to strengthen the narration* through the insertion of characters, *critiques* of what exists in the present and the

Figure 9   Empathy and value maps, trend and rupture matrices Phase I, Foresight CGAP IAEN

Figure 10   Science Fiction narrative for the Universidad de la Costa 2035, Phase II

Farenheit 5855: Sociedades y Universidades deshumanizas

Mi viaje de regreso a Barranquilla se había pospuesto por diversos motivos y aquí estábamos en el medio del Atlántico, con una avería en una de las alas, lo que nos obligaba a aterrizar en una de las islas más cercanas; que por lo que vi no quedaba muy lejos de Puerto Colombia.

No teníamos mucho tiempo, por lo que el piloto descendió apenas pudo, las ambulancias nos esperaban en caso de emergencia. Nunca me había puesto a pensar en qué haría en mis últimos 10 minutos de vida, pero mantener la tranquilidad era la única alternativa posible. El avión afortunadamente descendió, se estabilizó y aterrizó sin mayores

Figure 11   Science Fiction narrative for Mendoza's Foresight 2045, Phase II

MENDOZA FURY DESERT 2045

espués de salir de la Citadela, decidió partir hacia el sur
uscando una zona de la cual Nux siempre le había hablad
oasis en medio de un gran desierto. El camino fue tortuoso, lle
devastada por la violencia y el cambio climático, pero Max se d

incorporation of *emotional* elements. Depending on the inputs generated in the previous stage (latent needs, ruptures, black swans, trends, etc.), both utopian and dystopian scenarios are constructed, which are the two types of scenarios reproduced in fiction stories (Ahlqvist *et al.*, 2015; Bina *et al.*, 2017; Graham & Elahi, 2015; Von Stackelberg & McDowell, 2015; Zaidi, 2018).

Fiction scenarios have been developed in various processes such as those presented below for the city of Mendoza, Argentina (fiction narrative based on the book Fahrenheit 451 by Ray Bradbury) and for the Universidad de la Costa in Barranquilla, Colombia (fiction narrative based on the science fiction film Mad Max: Fury Road by George Miller) (Figures 10 and 11).

In this sense, narratology is the study of the structure of events, connections and causes that can lead to a literary form, which is important, since human beings are essentially storytellers (Burnam-Fink, 2015). As such, we organize and give meaning to our lives in terms of narratives. Moreover, as Graham and Mehmood state (2014: 87), "by combining realistic characters and social milieus with novel technology, science fiction can engage multiple ways of thinking, and draw out underlying values and sites of conflict and confusion."

The third stage (Design) strengthens the *strategic conversation* and the ability to *conjecture* about new services and products. It *strengthens narratives* by transforming them into something *more concrete* (prototypes) and complements three processes from the previous stage: by better visualizing the *consequences* of future actions and determining whether *concrete* options are being generated to meet the *latent needs* of future users. At this stage it is suggested to use guidelines pertaining to speculative design (Dunne & Raby, 2013) and critical design (Malpass, 2017), to materialize scenarios through the creation of future objects and services.

Linking science fiction with the structuring of prototypes (which are part of Design), enables the generation of more concrete results. It introduces real physical objects that require the participation of users, therefore facilitating their emotional and intellectual commitment (Graham & Mehmood, 2014). The prototype is a story where a product is described in a fictional way, which is not what actually is intended to be built, but rather just an example of what one hopes to build someday (Bell *et al.*, 2013).

These designs have been worked for some cities such as Loja, in Ecuador, or for the Universidad Nacional Agraria La Molina, in Lima, Peru (Figures 12 and 13).

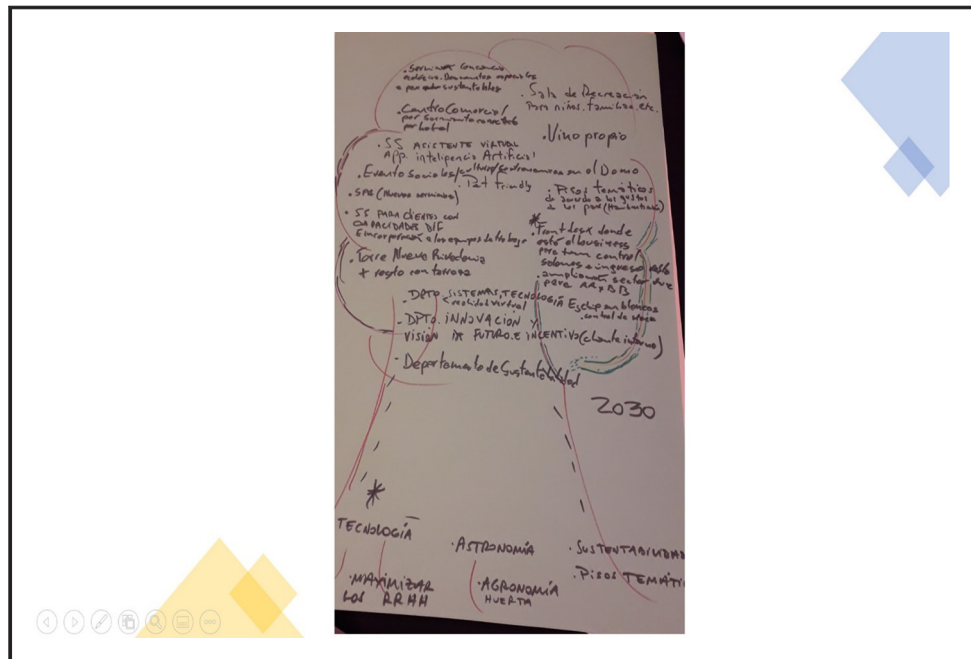| Figure 12 | Speculative designs for the city of Loja 2040, Phase III |

Figure 13   Speculative design for Universidad Nacional Agraria La Molina, Phase III

Figure 14   Competence Tree Hotel Diplomatic 2030, Phase IV


The last stage (Act Strategically) is a bridge between strategic foresight, planning and Operational Prospective, *Prospective Opérationnelle*, a concept suggested by Fabienne Goux-Baudiment (2008). This stage makes it possible to redress one of the shortcomings detected in the literature about the true impact of scenarios on decision-making processes. This will be done through the construction of future visions that translate into the creation of *new markets, the identification of future capabilities* to be acquired and the *mobilization* and commitment of internal customers of the organization. At this stage, it is suggested to use tools linked to the blue ocean strategy (Chan Kim & Mauborgne, 2015, 2018), and the construction of competence trees (Giget, 1998).

This phase has been developed for several private institutions such as the Hotel Diplomatic in Mendoza, Argentina (Figures 14 and 15).

The last stage (Act Strategically) is specific to normative processes, namely, to the construction of selected futures. In this case, new knowledge must be put into motion:

Figure 15 Blue Ocean Proposal Hotel Diplomatic 2030, Phase IV
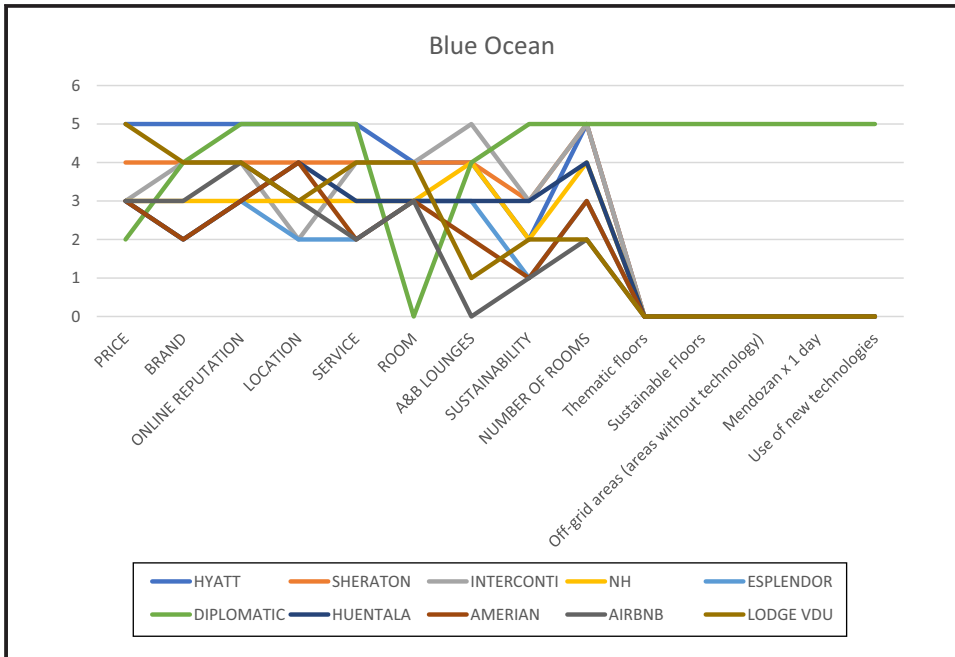
operational knowledge, in direct relation to action and the search for concrete results. This implies that, for the man of action, what counts is the passage from thinking about the future to its materialization. Accordingly, mapping out a path is fine, though not enough. Hence, the importance to have navigation instruments (compass) to know: what distance to cover, for how long, which stages, etc.; this will allow us to calibrate and identify the necessary resources. Skills are also part of the journey, as well as the presence of a charismatic and motivated leader; including communication tools (videos, conferences, publications, etc.) (Goux-Baudiment, 2014).

This new integral model seeks to give greater emphasis to the participation of users and strategic partners of an organization than to experts; it emphasizes creative aspects, and it seeks to materialize the future through the design of everything that has been identified as a new service or product in fictional scenarios. Therefore, it has, above all, a normative approach. Hence, it shares practices and procedures used in other prospective processes, namely: Ramos (2017), Candy (2017), Hekkert and van Dijk (2011), Goux-Baudiment (2014), Kerspern (2018), Zaidi (2017), and Mason *et al.* (2015). All these authors have devised prospective processes that use science-fiction (Zaidi, Kerspern), or speculative design (Candy, Hekkert and van Dijk), or design thinking (Spencer), or tools to analyze trends (Mason *et al.*), or procedures to move from vision to action (Ramos); however, there is no process where all these components are utilized within the same integral framework, as proposed in the following model.

Accordingly, integral methods are commonly used in Foresight. Goux-Baudiment (2014) points out that these are not necessarily new methods but rather cognitive processes that integrate pre-existing methods, such as Godet's scenario method (Durance & Godet, 2011); as well as the scenario building method; Masini's systemic methods; Slaughter's integral futures and computer processes, which allow us to benefit from different methods by integrating them into the same platform, such as Futuring-Lab [1].

In the present case, this new process is envisaged as a metamethod rather than a locked one, with fixed stages and tools (straitjacket style); indeed, it resembles the metamethod

advanced by Goux-Baudiment (2014). This author considers that the Foresight metamethod, common to most existing cognitive processes, consists of three distinct stages: understanding, imagination, and construction. Each one has its own features with respect to thinking about the future and can be the object of a separate study; however, it is the integral process that gives meaning to Foresight reflection, due to its capacity for accumulation and interaction among the parts.

The most standard practice of this metamethod involves analyzing the elements that enable the understanding of the object of study, then, bringing them together in a systemic vision (and imagining possible evolutions) and creative actions or changes (Goux-Baudiment, 2014). The desire to give meaning to the reflection on the future through the interaction among the parties, and the creation of a systemic vision to identify concrete actions, is what justifies the integrative model that is being proposed.

Below, the proposed integrative-hybrid model with the different tools that could be used throughout its different stages is presented Figure 16.

Thus, the Discovery phase can be used when it is necessary to make a diagnosis of the organization (what works, what does not work, expectations for the future) and to identify those elements that could preconfigure the future of an organization (trends, ruptures, etc.). If an organization already has a diagnosis, it can move directly to a more disruptive phase

| Figure 16 | Proposed prospective hybrid, integrative model |
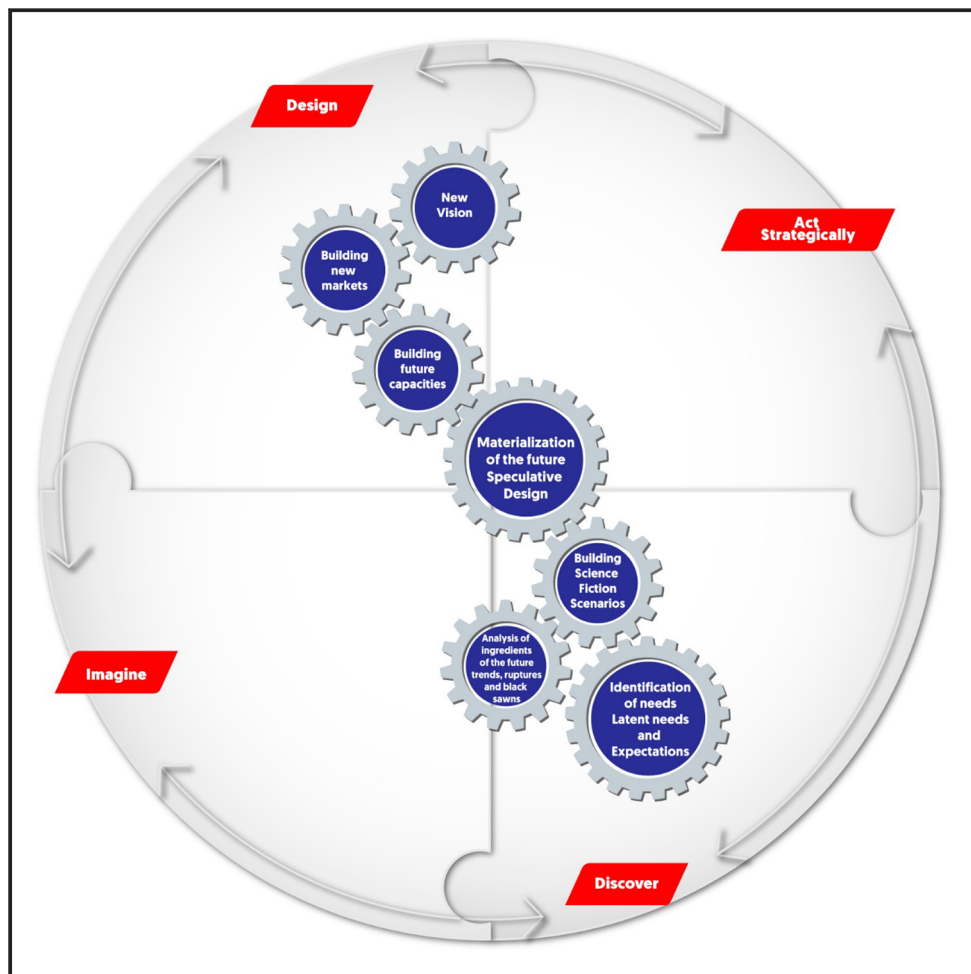
where tools or procedures are used to transport it directly into the future. The Imagination stage implies the use of science fiction to take participants out of reality and transport them to alternative worlds; therefore, it is convenient to carry it out when it is necessary to visualize completely different realities with respect to what exists in the present and to describe possible future ruptures; in other words, this phase will be used first and foremost in exploratory processes. The Design phase will be carried out when the organization needs to build prototypes with respect to new situations, products or services that it might be interested in developing in the future. These prototypes can describe utopian or dystopian situations and are intended to motivate discussion and debate. Finally, in case the organization needs to implement or reify the fictional narratives or the speculative design prototypes it has built, it will be necessary to carry out the Act Strategically phase, where the organization will choose the projects, strategies, and future competences that will guide it in the coming years, that is, within more normative processes, as pinpointed above, to move to a more Operational Prospective (Goux-Baudiment, 2008).

5. Discussion

The proposed model raises the need to better understand the (latent) future needs of people. To do so, it considers necessary to incorporate tools coming from other fields, for the capacity to link discourses and practices within and between disciplines and communities of practices, engendering new possibilities for barrier-crossing, mutual learning, and the creation of new fields. Traditional Foresight processes begin with the analysis of the environment, with the detection of change factors or trends, but they do not consider what the users of the scenarios (those who are going to experience the scenarios) might need in the future. Tools specific to the world of design thinking (Osterwalder *et al.*, 2014; Vianna *et al.*, 2016) could be an effective solution to better address prospective anthropology (Berger, 2008b).

On the other hand, science fiction engenders new visions of the future through the construction of "emotionally resonant stories" (Zaidi, 2018). It invites us to produce scenarios that better represent what strategic foresight requires in terms of elaboration of conjectures, reflection on consequences, generation of emotions and alerts that are rarely represented in the traditional way of building scenarios.

Another way to create greater impact is to materialize the scenarios with the help of speculative and critical design processes (Dunne & Raby, 2013; Malpass, 2017). It is not enough to produce scenarios that can be read but it is necessary to create different scenarios that can be seen, touched, or manipulated by future users. Design, under these guidelines, represents an opportunity to discuss, debate, and define a desirable future. The language of design supports the generation of questions, challenges, and inspirations (Dunne & Raby, 2013). During the creation of future products, discussions and reflections originate establishing bridges between imagination and materialization, through the design of these objects that become conversation pieces (Malpass, 2017). This fulfills several of the requirements identified in the literature reviewed, such as structuring conjectures, debating, and enriching strategic conversations.

Accordingly, although both science fiction and design could work independently in a Foresight process, science fiction really requires a design process to materialize what it has conjectured in the scenario and, at the same time, design cannot generate future products or services if there is no previous context that allows its insertion in a certain future reality. Science fiction and design must work complementarily in a Foresight process, especially if they seek to enrich an innovation process. The only way to visualize the future is by bringing elements from the future into the present, via materialization and design processes (Taleb, 2008a). Indeed, the interconnection and mutual shaping among strategic foresight, design thinking, and science fiction bridge the gap of traditional Foresight approaches that gloss

over serious questions of validity, impact, transfer of knowledge from experts to users and teachability.

Finally, by incorporating strategy tools into the proposed process, Foresight is brought closer to a more Operational Prospective. This will let its added value to be better evidenced, enabling scenarios not to remain simply in desires of improvement, but allowing the materialization of strategies and concrete actions that generate, at its time, new services and products that directly affect the creation or reshaping of existing markets.

This new process would generate potential new services and products representing important sources of innovation in the future for an organization, whether public or private. In the case of society, it would imply a new Foresight process that would allow the identification of alternative solutions over traditional ones, given the combined use of Science Fiction and Speculative Design. This could represent a hope for the solution of persisting problems in our society. In this same vein, the best study of users' expectations and the co-creation (along with them) of new future solutions, would allow to better satisfy their latent needs, thus contributing to a better Prospective Anthropology and a better quality of life in human beings.

Being this a new integrative method, it would be convenient that other researchers become interested in the added value generated by a process that simultaneously integrates Science Fiction, Speculative Design, as well as other management tools. These studies will surely facilitate the establishment of new knowledge areas that could be hybridized with Foresight in the future; as well as identifying other tools, from other disciplines, that could be incorporated into the world of Foresight.

6. Conclusions

Strategic foresight, as a knowledge discipline, entails the examination of processes that structure and enrich reflections on the future. Strategic foresight implies developing strategic conversations, attending to the latent needs of future users, managing uncertainty, championing sustained creative work with ideas and images of the future, taking into account the consequences of future events and promoting the freedom to imagine the future; likewise, it means developing impact narratives, democratizing scenario-building processes, making people aware of the desire for change, managing uncertainty and determining the role that human beings will have in the construction of their own future.

To meet these requirements, different processes have been presented, some more complex and others more complete, where the need to analyze the environment, establish hypotheses, construct evolutions, imagine future narratives and establish potential strategies to reach a scenario that has been established as desired is described. Apparently, everything meshes perfectly, however, the literature evidences flaws, since impact scenarios are not generated, they do not affect the decision-making processes and organizations have difficulty to conceive the added value of Foresight to their organizational processes.

To overcome such shortcomings, a hybrid process that articulates science fiction, speculative design, and tools inherent to strategy is proposed, with a view to moving from imagination to the materialization of scenarios. In the current context it would no longer be enough to build scenarios that can be read, indeed it is necessary to redirect efforts towards the construction of scenarios that can be seen, touched, and felt; scenarios that are the result of highly participatory processes (where the participation of users is privileged), where priority is given to the ability to conjecture, strategic conversation and a better identification of the latent needs of future users. In other words, there is a need to change the way Foresight is being carried out to transform it into a richer, more creative, participatory, and effective process, where tools and principles from other areas of knowledge are intertwined.

Note

1. For more information see: http://futuringlab.com/. Accessed on January 21, 2020.

References

Ahlqvist, T., Uotila, T. and Hietanen, O. (2015), "Chasing black swans through science fiction: surprising future events in the stories of a Finnish writing competition", *Journal of Futures Studies*, Vol. 20 No. 2, pp. 47-66, doi: 10.6531/JFS.2015.20(2).A47.

Akkawi, Y. (2018), "Science fiction has helped predict the future of technology. here's why we should be worried", available at: www.inc.com/yazin-akkawi/what-science-fiction-has-taught-us-about-predicting-future-and-why-we-should-be-worried.html (accessed 21 September 2019).

Ayres, L. (2008), "Thematic analysis", *The SAGE Encyclopedia of Qualitative Research Methods*, Sage Publications, pp. 867-868.

Bas, E. (2014), "Educar Para innovar", Estudios de Juventud, available at: www.injuve.es/sites/default/files/2014/31/publicaciones/Documento1.Educarparainnovar.pdf

Bell, W. (2012), "Sobre cómo convertirse en un futurista y cómo serlo: una entrevista con wendell bell, por levelhead 753", *Prospectiva e Innovación*, Vol. 1, Plaza y Valdéz, *Visiones*, Mexico DF.

Bell, F., Fletcher, G., Greenhill, A., Griffiths, M. and McLean, R. (2013), "Science fiction prototypes: visionary technology narratives between futures", *Futures*, Vol. 50, pp. 15-24, doi: 10.1016/j.futures.2013.04.004.

Berger, G. (2008a), "L'attitude prospective", *De la Prospective*, L' Harmattan, Paris.

Berger, G. (2008b), *L'Homme et Ses Problemes Dans le Monde de Demain*, L' Harmattan, *De la Prospective*. París.

Berger, G. (2008c), "L'avenir des sciencies de l'home", *De la Prospective*, L' Harmattan, Paris.

Berger, G. (2008d), "Sciences humaines et prevision", *De la Prospective*, L' Harmattan, Paris.

Bina, O., Mateus, S., Pereira, L. and Caffa, A. (2017), "The future imagined: exploring fiction as a means of reflecting on today's grand societal challenges and tomorrow's options", *Futures*, Vol. 86, pp. 166-184, doi: 10.1016/j.futures.2016.05.009.

Burnam-Fink, M. (2015), "Creating narrative scenarios: science fiction prototyping at emerge", *Futures*, Vol. 70, pp. 48-55, doi: 10.1016/j.futures.2014.12.005.

Cagnin, C. and Loveridge, D. (2011), "A business framework for building anticipatory capacity to manage disruptive and transformative change and lead business networks towards sustainable development", *Fourth International Seville Conference on Future-Oriented Technology Analysis (FTA) FTA and Grand Societal Challenges – Shaping and Driving Structural and Systemic Transformations*, Sevilla.

Candy, S. (2017), "Gaming futures literacy: the thing from the future", *Transforming the Future: Anticipation in the 21st Century, (January)*.

Candy, S. and Dunagan, J. (2017), "Designing an experiential scenario: the people who vanished", *Futures*, Vol. 86, pp. 136-153, doi: 10.1016/j.futures.2016.05.006.

Chan Kim, W. and Mauborgne, R. (2015), *La Estrategia Del Océano Azul*, Editorial Norma, Bogota.

Chan Kim, W. and Mauborgne, R. (2018), *La Transición al Océano Azul*, Empresa Activa, Madrid.

Concheiro, A. (2016), "Prospectiva: una visión crítica y algunas preguntas abiertas sobre sus posibilidades y limitaciones", *El futuro a debate*, Limusa, Mexico DF.

Corsi, P. (2015), "Forcing the design of fictional futures: from theory to cases implementation", *Journal of Futures Studies*, Vol. 20 No. 2, pp. 81-104, doi: 10.6531/JFS.2015.20(2).A81.

De Jouvenel, B. (1966), *L'Art de la Conjecture*, Editions du Rocher, Monaco.

De Jouvenel, H. (2004), "Invitation à la prospective", *Futuribles*,

Draudt, A., Hadley, J., Hogan, R., Murray, L., Stock, G. and West, J.R. (2015), "Six insights about science fiction prototyping", *Computer*, Vol. 48 No. 5, pp. 69-71, doi: 10.1109/MC.2015.142.

Dunne, A. and Raby, F. (2013), *Speculative Everything*, The Mit Press, London.

Durance, P. (2014), "Penser la rupture", *La Prospective Stratégique en Action*, Odile Jacob, Paris.

Durance, P. and Godet, M. (2011), *La Prospectiva Estratégica*, Dunod.

Gibbs, A. (2017), "Using science fiction to explore business innovation", available at: www.digitalpulse. pwc.com.au/science-fiction-explore-business-innovation/ (accessed 21 September 2019).

Giget, M. (1998), *La Dynamique Strategique de l'Entreprise*, Dunod, Paris.

Godet, M. (2007a), *Manuel de Prospective Stratégique, l' Art et la Method*, Dunod, París.

Godet, M. (2007b), "Manuel de prospective strategique", *Une Indiscipline Intellectuelle*, Dunod, Paris.

Goux-Baudiment, F. (2008), *Une Nouvelle Etape du Developpement de la Prospective: La Prospective Operationnelle*, Pontificia Università Gregoriana.

Goux-Baudiment, F. (2014), "DE l'attitude a l'action prospective: une Meta methode", *CONSTRUIRE LES FUTURS – Contributions Épistémologiques et Méthodologiques à la Démarche Prospective*, Presses Universitaires de Namur, Namur.

Graham, G. and Mehmood, R. (2014), "The strategic prototype 'crime-sourcing' and the science/science fiction behind it", *Technological Forecasting and Social Change*, Vol. 84, pp. 86-92, doi: 10.1016/j. techfore.2013.10.026.

Graham, P. and Elahi, S. (2015), "The new narrative: applying narratology to the shaping of futures outputs", *Futures*, Vol. 74, pp. 49-61, doi: 10.1016/j.futures.2015.09.003.

Gunn, E. (2014), "How america's leading science fiction authors are shaping your future", available at: www. smithsonianmag.com/arts-culture/how-americas-leading-science-fiction-authors-are-shaping-your-future-180951169/ (accessed 21 September 2019).

Hales, D. (2013), "Design fictions an introduction and provisional taxonomy", *Digital Creativity*, Vol. 24 No. 1, pp. 1-10, doi: 10.1080/14626268.2013.769453.

Hamel, G. and Prahalad, C.K. (2010), "Strategic intent", *Harvard Business Review*, Vol. 21.

Hekkert, P. and van Dijk, M. (2011), *Vision in Design*, Matthijs van Dijk and BIS Publishers, Amsterdam.

Holstius, K. and Malaska, P. (2004), *Advanced Strategic Thinking*, Publications of the Turku School of economics and business administration, Helsinki.

Inayatullah, S., Izgarjan, A., Kuusi, O. and Minkkinen, M. (2016), "Metaphors in futures research", *Futures*, Vol. 84, pp. 109-114, doi: 10.1016/j.futures.2016.04.004.

Kerspern, B. (2018), "Economic design fictions: finding the human scale", *Economic Science Fictions*, Goldsmiths Press, London.

Kuusi, O., Lauhakangas, O. and Ruttas-Küttim, R. (2016), "From metaphoric litany text to scenarios – how to use metaphors in futures studies", *Futures*, Vol. 84, pp. 124-132, doi: 10.1016/j.futures.2016.03.014.

Lombardo, T. (2015), "Science fiction: the evolutionary mythology of the future", *Journal of Futures Studies*, Vol. 20 No. 2, pp. 5-24, doi: 10.6531/JFS.2015.20(2).A5.

Lombardo, T. (2017), *Science Fiction: The Evolutionary Mythology of the Future*, Changemakers books, Winchester.

Malpass, M. (2017), *Critical Design in Context*, Bloomsbury Academic, London.

Masini, E. (2013), "Investigación de futuros y análisis sociológico", *Eleonora Barbieri Masini Alma de Los Estudios de Los Futuros*, Fundación Javier Barros Sierra, Mexico, DF.

Mason, H., Mattin, D., Luthy, M. and Dumitrescu, D. (2015), *Trend Driven Innovation*, Wiley, NJ.

Massé, P. (2008), "Planification et prévision", *De la Prospective*, L' Harmattan, Paris.

Medina, J., Castaño, P. and Becerra, S. (2014), *Prospectiva y Política Pública Para el Cambio Estructural en América Latina y el Caribe Para el Cambio Estructural en América Latina y el Caribe*, Libros de la Cepal, Santiago de Chile.

Merchant, B. (2018), "Nike and boeing are paying Sci-Fi writers to predict their futures", available at: https:// onezero.medium.com/nike-and-boeing-are-paying-sci-fi-writers-to-predict-their-futures-fdc4b6165fa4 (accessed 21 September 2019).

Miklos, T. and Arroyo, M. (2012), "Prospectiva y escenarios Para el cambio social", *Prospectiva e Innovación*, Plaza y Valdéz, Mexico, DF, pp. 277-299.

Miles, I. and Keenan, M. (2020), *Overview of Methods Used in Foresight*, Universidad de Manchester, Londres.

Mintzberg, H., Ahlstrand, B. and Lampel, J. (2013), *Safari a la Estrategia*, Granica, Buenos Aires.

Osterwalder, A. and Pigneur, Y. (2010), "Generación de modelos de negocio | PlanetadeLibros.com (primera ed)", Deusto, Barcelona, available at: www.planetadelibros.com/generacion-de-modelos-de-negocio-libro-49022.html

Osterwalder, A., Pigneur, I., Bernarda, G. and Smith, A. (2014), *Diseñando la Propuesta de Valor*, Deusto, Barcelona.

Patton, M. (2002), *Qualitative Evaluation & Research Methods*, Sage Publications.

Poli, R. (2010), "The many aspects of anticipation", *Foresight*, Vol. 12 No. 3, pp. 7-17, doi: 10.1108/14636681011049839.

Ramos, J. (2017), "FuturesLab: anticipatory experimentation", *Social Emergence and Evolutionary Change*, Vol. 22, pp. 107-118, doi: 10.6531/JFS.2017.22(2).E107.

Schwartz, P. (1995), "La planificación estratégica por escenarios", *Cuadernos de La Administración*, Vol. 21.

Serpell, N. (2019), "Cuando los autores de ciencia ficción pronosticamos el future", available at: www.infobae.com/america/the-new-york-times/2019/03/14/cuando-los-autores-de-ciencia-ficcion-pronosticamos-el-futuro/?fbclid=IwAR0Sa7Z_YJL68xgeYzzT0PLW4JZv8GV9wlPUk72LAEkJjOVLK1cMS8pOc9Y (accessed 21 September 2019).

Stoffaes, C. (2001), "Les logiciels de la pérennité", *Prospective Stratégique D'Entreprise*, Dunod, Paris.

Taleb, N. (2008a), *Le Cygne Noir*, Les Belles Lettres, Paris.

Taleb, N. (2008b), *Le Hasard Sauvage*, Les Belles Lettres, Paris.

Van der Heijden, K. (2009), *Planejamiento Por Cenarios, a Arte da Conversacao Estrategica*, Artmed Editora, Porto Alegre.

Van der Heijden, K. and Schwartz, P. (2001), "Culture D'entreprise et planification par scénarios: une relation de coevolution", *Prospective Stratégique D'Entreprise*, Dunod, Paris.

Van Leemput, M. (2019), "Destinations for polyamorous futures and their MAD lovers", *Journal of Futures Studies*, Vol. 23, pp. 3-14, doi: 10.6531/JFS.201906.

Vianna, M., Vianna, Y., Adler, I., Lucena, B. and Russo, B. (2016), *Design Thinking: Innovación en Los Negocios*, MJV Press, Rio de Janeiro, doi: 10.1007/978-3-642-13757-0.

Von Stackelberg, P. and McDowell, A. (2015), "What in the world? Storyworlds, science fiction, and futures studies", *Journal of Futures Studies*, Vol. 20 No. 2, pp. 25-46, doi: 10.6531/JFS.2015.20(2).A25.

Wilkinson, A. (2017), "Strategic foresight primer", *Global Trends to 2030: The Making of a New Geopolitical Order?*, European Political Strategy Centre.

Zaidi, L. (2017), *Building Brave New Worlds: Science Fiction and Transition Design*, OCAD University.

Zaidi, L. (2018), "Science fiction and transition design".

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