Designing a moving strategic foresight approach: ontological and methodological issues of scenario design

Anne Marchais-Roubelat and Fabrice Roubelat

Anne Marchais-Roubelat is Associate Professor at Laboratoire Interdisciplinaire de Recherches en Sciences de l'Action (LIRSA) – EA 1722, Conservatoire national des arts et métiers (Cnam), Paris, France.
Fabrice Roubelat is Associate Professor at Centre de Recherche en Gestion (CEREGE) – EA 4603, University of Poitiers, Poitiers, France.

Received 7 December 2014
Revised 18 April 2015
5 July 2015
Accepted 7 July 2015

Abstract

Purpose – *This paper aims to introduce movements in scenario methodology, to design a moving strategic foresight approach.*

Design/methodology/approach – *The authors firstly question the limits of plausibility from an ontological and epistemological perspective to expand scenarios beyond the boundaries of end-states. To incorporate ongoing changes in scenario methodology, the authors propose to explore scenario transformations within the conceptual framework of action-based scenarios.*

Findings – *The authors discuss consequences of playing strategies within ongoing scenarios, as well as the research directions about moving scales, stakeholders' dominance and time issues.*

Originality/value – *The paper proposes a method to distort and transform scenarios. The authors suggest supplementing strategic foresight in iterative processes to challenge the boundaries of plausible futures, bridging the gap between theoretical ever-changing processes and the moving rhythms of actions.*

Keywords *Methodology, Transformation, Action, Scenarios, Movement*

Paper type *Conceptual paper*

Beyond the ongoing discussion on the nature of the field of "futures studies" and on the terms used to describe it (Sardar, 2010), foresight and its spin-off "strategic foresight" have become for the past two decades a core concept of future-oriented literature (Slaughter, 1993; Hines and Bishop, 2006; Sarpong *et al.*, 2013), together with the rise of the use of scenarios in organizations (Rigby and Bilodeau, 2007), as well as in scholar literature (Ramirez *et al.*, 2008). While it tends to be defined as a process (Piirainen and Gonzalez, 2015), strategic foresight is also viewed as a skill (Slaughter, 1993) or "ingrained managerial competencies or capabilities" to add to "sets of processes or tools" that are developed by organizations in the face of "accelerated change and genuine uncertainty" (Sarpong *et al.*, 2013).

During the past decade, the growing use of scenarios has been reported as a response to manage "uncertainty in an increasingly turbulent world" (Rigby and Bilodeau, 2007), although scenarios have also been discussed in terms of usefulness (Inayatullah, 2009). In literature, scenarios have been related to the concepts of surprise and disruption (Burt, 2007), paradigm shift (Roubelat, 2006), turbulence (Ramirez *et al.*, 2008), uncovering causality (Wright and Cairns, 2011) and stakeholder engagement (Cairns *et al.*, 2013). As scenarios need not to be confused with foresight, they remain "the archetypal product of futures studies" (Bishop *et al.*, 2007) while they have for decades framed the futures field as one of its dominant paradigms (Mannermaa, 1991). From a conceptual point of view, scenarios are based on future end-states (Jungermann, 1985; van Notten *et al.*, 2003; List, 2004; Burt, 2007), which we suggest in this paper to question to introduce movement in strategic foresight. Together with standard scenario methods (Bradfield *et al.*, 2005), the need for additional scenarios (Kahn and Wiener, 1967) and the need to broaden the scope

of constructed scenarios and to discuss their boundaries (Wright and Goodwin, 2009; Wright and Cairns, 2011) are key issues of scenario literature, while challenges to be addressed by foresight are defined to be "boundary spanning" (Georghiou and Harper, 2013).

In this conceptual essay, we propose a moving strategic foresight approach that is designed as an ongoing process looking not only forward and backward but also overboundaries. Through the lens of scenario literature, we first discuss the need to introduce movement over scenario ends-states (Section 1) and to incorporate ongoing transformations (Section 2). As an outcome, we suggest introducing movements through action-based scenarios (Marchais-Roubelat and Roubelat, 2011a) to enhance scenario methodology. To design scenarios in motion, we propose to explore scenario transformations within the conceptual framework of action-based scenarios (Section 3). To explore implications for practices and research in strategic foresight, we discuss consequences of playing strategies within ongoing scenarios, as well as the research directions about moving scales, stakeholders' dominance and time issues (Section 4). To conclude, we propose to go further in bridging the gap between strategic foresight theory and practice by considering in action-based scenarios methodology future events as symbols, which full meaning depends on the complement added, this complement depending on various future contexts (Section 5).

1. Strategic foresight beyond scenario end-states

If "there is almost endless debate as to the philosophy and epistemology of Futures Studies", by contrast "there is a remarkable lack of reflection and research on practical application of futures methods" (Scapolo and Miles, 2006). Challenging the nature of scenarios questions both practical application and epistemology of strategic foresight, as seminal futures works suggest extending scenarios beyond end-states.

The concept of end-state structures scenario literature (Jungermann, 1985; Van Notten *et al.*, 2003; List, 2004; Burt, 2007) from a methodological point of view first, but also from an epistemological and ontological perspective. In their "updated scenario typology" (van Notten *et al.*, 2003), van Notten, Rotmans, van Asselt and Rothman use Jungermann and Thuring's works to distinguish "two types of scenarios when addressing their temporal nature: developmental or chain on the one hand and the end-state or snapshot on the other". In their definition, chain scenarios "describe the path of development to a particular end-state" while snapshots scenarios describe the end-state itself, the process to go there being implicit. Whatever the temporal nature of scenarios, the end-state appears as a border that fixes a scenario in the future.

For list, however, "in practice, most attention seems to have focused on the end-state, with much less written about the sequences of events" (List, 2004). End-states propose not only horizon years for scenarios but also borders resulting from an incremental conception of time. These borders have been pictured as a "cone of plausibility" (Taylor, 1993; Miller, 2011). Plausible futures are embedded by the cone and the cone designs the range of plausible futures. As a result, strategic options are generated within this cone of plausibility to propose robust strategies within the cone, framing the different steps of strategic foresight. A major assumption of such an approach is that the future could be uncovered somewhere in the cone of plausibility, and strategic options can be generated to assess their robustness against plausible scenarios (Schoemaker, 2002). The underlying question is to wonder if extreme scenarios (Wright and Cairns, 2011) are in the cone of plausibility or not. Another aspect of this problem would be to explore if the borders of the cone are moving. As Herman Kahn pointed out, plausibility appears one of the key issues of scenario methodology (Kahn, 1962). Nevertheless, "the enhanced importance of unlikely events is a novel and most significant element in our age of technology; and to plan prudently means increasingly to extend the boundaries of plausibility" (Kahn, 1966).

From an epistemological point of view, this questions the nature of the knowledge produced in strategic foresight processes, to be enriched by seminal futures literature, which is rarely discussed – although quoted – in recent literature. In *history and futurology*, Flechtheim's futurology was not defined as "a new and special segment of knowledge but rather [. . .] a new synthesis of varied materials" (Flechtheim, 1966). For Flechtheim, futurology:

> [. . .] is closely related to history and could indeed be pictured as a projection of history into a new time dimension. In the absence of written and unwritten records, however, Futurology makes use of a different method of approach. It cannot work with the chronological sequence of detailed facts; instead it will avail itself of interpretation, generalization, and speculation to a considerably higher degree.

For Flechtheim, "actual prospective developments" that are developed by futurology are based on their "degrees of credibility or mathematical probability". As a result, "actual prospective developments" cannot be designed exactly as past chronologies of facts and events: historical chronologies and narratives would be different in nature, as in the method, from scenarios. In addition, scenarios would deal with "virtual" (Granger, 1995) developments rather than with "actual prospective" ones. Maybe because sequences of events are too close to historical chronologies, they look too uncertain to be designed precisely while the end-state would be a symbol of the process that produced it and of the prospective processes able to come after it.

From an ontological perspective, Bertrand de Jouvenel proposed, in his *Art of Conjecture,* to distinguish "facta" from "futura" to emphasize that possible futures are different in nature from past facts. For Jouvenel, a "futurible is a *futurum* that appears to the mind as a possible descendant from the present state of affairs" (de Jouvenel, 1967). In Flechtheim, as in Jouvenel's approach, past and futures are different in nature. Futures appear to be "intellectual constructions" rather than a field of knowledge, as Jouvenel emphasized it. In their "theory of futuribles", Malaska and Virtanen (2005) designed the transformation process of what they called "futures manifold" and mapped "histories and scenarios in the future space" moving from an hypothetical present to successive "futuribles" on the course. Although the process seems to be endless in theory, Malaska and Virtanen use the concepts of targeted point and end points, together with the alternative courses, so that, in practice, this way to design the future as a process ends with a specific futurible.

In Jouvenel's view, a process is defined as development of a phenomenon that is not selected like goal by a human will, but that may be considered as resulting from a complex mix of actions (Jouvenel, 1967). If the concept of end-state may be useful to make sense from a goal, such a border would be overflowed by ongoing actions. In such an action-based view, the concept of state itself has to be challenged, as futures should pay attention to open our view of time rather than being trapped in a static view of the world, as Berger emphasized it to highlight the legacy of Bergson's works (Berger, 1964). As Bergson pointed out, human action is used to manage fixed points, and it is thus easier to cope with states that provide partitions of changes through time, although changes cannot be divided (Bergson, 1938). Thus, it is a key issue for strategic foresight design process to choose between archetypes that are described by end-states and the many movements that rhythm action processes. Back to List's remark (List, 2004), the question is less to develop sequences, i.e. partitions of the process, than to propose an approach of change. Such an approach of change suggests that, following not only Bergson but also Aristotle (Physics, book IV-11), time is continuous so that an end-state as a border is not time but the intellectual construction of an accident in the flow of time. End-states would thus be singular tags to be challenged by the flow of time. While the concept of instability implies that states cannot be useful to frame action processes, looking for movements that make ongoing transformations, without borders nor limits, either in time or space, would be in such an approach the scenario stuff.

2. Incorporating ongoing transformations

As strategic foresight and scenario methods relate to changes or instability, some recent works tried to connect scenarios to theoretical frameworks such as turbulence (Ramirez *et al.*, 2008), disruptions and discontinuities (Burt, 2007) and paradigm shifts (Roubelat, 2006).

Ramirez *et al.*' (2008) book on *Business Planning for Turbulent Times* is based on the use of 1965 theoretical framework of Emery and Trist (1965) about the different types of causal textures: placid random, placid clustered, disturbed reactive and turbulent, while additional types were later proposed such as MacCann and Selsky's hyper-turbulent (McCann and Selsky, 1984) and Baburoglu's vortical ones (Baburoglu, 1988). For Ramirez, Selsky and van der Heijden, "as fields take on the characteristics of a turbulent environment causal texture, the use of methods such as scenarios to address turbulence is bound to rise" (Ramirez *et al.*, 2008). In such a framework, the causal texture is considered as the manifestation of a relative instability and scenarios lead to "a growing awareness of predetermined elements, reduced uncertainty and better insights on how the remaining uncertainties may play out". As they sum up, in a turbulent causal texture, "the whole common shared ground is in motion" while systems acting alone cannot survive and successful responses are based on "collaborative strategies among dissimilar organizations in field" (Ramirez *et al.*, 2008).

In his 2007 paper, George Burt focused "the integration of Christensen's theory of disruption and system analysis with the scenario method" (Burt, 2007) to address disruption and/or discontinuity. In this paper, disruption was defined as "throwing into disorder (the current state of order)" and discontinuity as "a lack of continuity or cohesion (with past experience bringing out a new state of order)". He also emphasized that disruptions are "generally considered temporary and intermittent in nature with the old order eventually returning" while "discontinuities are generally considered as more permanent and irrevocable in nature". This distinction stresses the question of irreversibility in system dynamics. For Burt, scenarios need:

> [. . .] to link the past to the present, which in turn is linked to the future (end state) through cause and effect reasoning. The establishment of such causal relationships presents an opportunity to understand the hidden systemic structures that either drive disruption and discontinuity or can be exploited by other actors about disruption and discontinuity (Burt, 2007).

The paradigmatic function of futures studies has been outlined by Kahn (Kahn, 1966). Scenarios and emerging ideologies have been connected within the theoretical framework of Kuhn's structure of scientific revolutions (Kuhn, 1962). In such an approach (Roubelat, 2006), trends "often strengthen the dominant paradigm" and are "most of times puzzle solving but can reveal an anomaly" while wildcards reveal anomalies that "challenge the dominant paradigm by emphasizing a surprising or improbable development, or a major uncertainty". Scenarios are thus based on competing paradigms, which means that the different scenarios reveal a plurality of worldviews to frame the future altogether. Within that framework, scenarios are social constructions of virtual developments and sequences to be phases of an action process that would be endless. The long term would not be evaluated in durations, but in phase transitions, which are not only major transitions such as in "big" history (Aunger, 2007) but also slight ones. In such process, turbulence, disruptions and discontinuities would express different switches from a scenario to another. Scenarios would there be symbols of movements to explore prospective action processes around such movements, which uncover end-states or not. As a result, the usual definition of scenarios from end-states would be enriched through the search for movements, as scenarios would need to be transformed to incorporate ongoing transformations. The point is to look for the transformation of rules, considered as constraints on stakeholders' behaviours or connections between variables in action processes (Marchais-Roubelat and Roubelat, 2008), rather than uncovering archetypes of change as change is an ongoing and never-ending process (van de Ven and Sun, 2011). As Berger summarized: "in the

game we must play today, rules are being modified incessantly, whereas the pieces change their number and properties even during the game itself" (Berger, 1957). Before scenarios appeared in futures literature – Berger never wrote a word on scenarios -, Berger was inviting us to design an approach to manage ever-changing rules. From an ontological point of view, this invites strategic foresight to design rules in a transformational perspective, which means that rules would be challenged from action processes whatever their origin and type. If the rules cannot last in time, the ways scenarios are transforming is worth to be investigated to explore prospective action processes beyond end-states.

3. Transforming action-based scenarios: methodological proposals

From an ongoing and asymmetrical time point of view, scenarios could be designed as action processes to be transformed. In a foresight perspective, action processes can be considered as never-ending transformations, moving beyond stakeholders' actions, goals and intentions, including collective, organizational and individual actions. Action processes provide the context that gives meaning to the prospective movements in scenarios. The underlying proposition is that movements have no intrinsic nature, so that they don't fully contain their meaning (Marchais-Roubelat, 2012). A part of their meaning depends on the ongoing move of the action. As a result, the approach lies within a logic of movement, rather than a rational logic of choice between different situations as it is based on a different conception of time. A movement implies a modification of a dimension of evaluation of the action (modification of a variable, appearance or disappearance of a variable) and/or of actors (actors's moves and organizational transformations, actor's appearance or disappearance). A movement does not always imply a paradigm shift, as the understanding of this movement can be puzzle solving within an existing scenario. When revealing an anomaly – to be solved in a new paradigm -, a movement implies the design of a new scenario.

Within the conceptual framework of action-based scenarios, a scenario is designed from one rule (or a set of rules). As long as this rule – or this set of rules – is fulfilled, movements do not challenge the scenario. When the rule is challenged, the action enters a new phase, so that a new scenario has to be designed. Such evolutions of the rule are not necessarily viewed as a discontinuity as slight deviations may progressively transform the rule, the scenario being in that case continuously adjusted as in a trend-based scenario.

Within the conceptual framework of action-based scenarios (Marchais-Roubelat and Roubelat, 2008, 2011a), three stages may be designed to supplement scenario methodology (Table I). Stage 1 aims to find the scenario rules, which are based on movements, scenarios being virtual phases of action processes. Stage 2 explores switches between scenarios to look for movements that create phase shifts. In this stage, roads to and from scenarios are assessed within a set of scenarios, crossing the borders of a scenario to move to another one. Stage 3 distorts the rules to introduce movements likely to transform action processes.

To animate an action-based scenario, three types of rules (action rule, institutional rule, operations rule) would be needed. They are completed by a steering rule, which introduces an ongoing control during the scenario by the stakeholders (Table II). The action rule explores the acts within the action process (what stakeholders actually do, what they are not acting on). As scenarios evolve through stakeholders' as well as contextual moves, the scenario frontiers are continuously designed from action processes. The institutional

Table I Scenarios in motion: ruling, exploring and distorting scenarios

Scenario design stages	*Status of movement*
Ruling scenarios	Movements make the rules
Exploring switches between scenarios	Movement create switches between scenarios
Distorting scenarios	Movement create rule distortions

Table II Action-based scenarios: movement logic and impact on scenario issues

Rule to be applied or created	*Movement logic*	*Impact on scenario issues*
Action rule		
The acts of the action What?	What stakeholders are acting on What stakeholders are not acting on	Designing the scenario development from action processes Scenarios evolve through stakeholders' as well as contextual moves
Institutional rule		
What triggers the action Why?	What opposes the action What justifies the action	Questioning the expansion of behavioural, legal, ethical, political triggers Scenarios are triggered by stakeholders' moving values and interests
Operations rule		
What constrains the course of the operations How?	Evaluation of the action options	Organizing the action process Scenarios are constrained by moving organising processes
Steering rule		
What enables stakeholders to control the action How long?	Evaluation of the process transformations: Transfer Stalemate Oscillation Phase lag	Challenging the scenario duration through lasting, ephemeral or interstitial transformations Scenarios are rhythmed by ongoing transformations

rule looks for the moving triggers – as well in terms of value as in terms of interest – of the scenario (what opposes and what justifies the action). The context of the action is defined through behavioural, political, ethical, or legal triggers, which are viewed as moving and interacting with stakeholders' actions. The operations rule analyses what constrains the operations, by assessing how the action process is organized.

The simultaneous functioning of these three rules enables the steering rule to be created: thereby enabling stakeholders to control the action. In a transformational perspective, the steering rule is tested, as well as the set of rules. The main question is to find out how the scenario may be transformed. Shifts from a scenario set to a new one are analysed by transfers. In a stalemate, stakeholders cannot quit the scenario, as they seem to be trapped in the set of rules. In oscillations, stakeholders go to and fro between different set of rules. In a phase lag, some stakeholders do not follow the set of rules of the scenario where they are engaged, performing parallel scenarios. Looking for such transformations of the scenario enables to identify risks or innovations, as well as new phases of the action process.

As scenarios are rhythmed by ongoing transformations, the scenario duration is challenged. Some scenarios may be long lasting, when stakeholders are trapped in stalemates. Or ever-changing rules may lead to ephemeral scenarios where stakeholders' strategies and organizations would not be sustainable, where values and interests would have to be continuously re-assessed. Oscillations could be ephemeral too while interstitial scenarios might introduce phase lags where some stakeholders perform pop-up strategies that are melted in the flow of time when the action process moves.

4. Discussion: challenging the boundaries of strategic foresight

As a first practical – but also theoretical – implication, the gap between scenarios and strategies that frames strategic foresight literature is to be questioned. In the action-based scenario approach, scenarios are ongoing processes, so that end-states are no more relative fixed points to assess strategies. Strategic options are to be played within ongoing scenarios and might be distorted too. As a result, the search for robustness, as well as the one of flexibility in strategy generation (Schoemaker, 2002) is not a key issue of such an approach of scenario methodology. In action-based scenarios, there is no gap between

scenarios and strategies, as strategies are embedded in the scenario rules to strengthen, to challenge or to distort them. As Ramani and Richard (1993) stated, irreversibility challenges flexibility as it reduces former prospective options, but is considered as the only way to create new ones. Strategic issues relate to prospective movements that transform the course of the action process, so that renewed stakeholders enter a new phase, then a new scenario. In terms of strategy, stakeholders have thus to pay attention to switches and to distortions.

Having no fixed point raises new methodological issues for strategic foresight that becomes a moving ongoing process. Prospective switches and distortions are virtually unlimited so that the approach shifts from a systematic-rational exploration of virtual futures to the choice of moves to be explored and developed. Such scenarios are not chosen because they are plausible, resulting from a deterministic-rational approach, but because they are the symbol of strategic issues. This symbolic side of scenarios is particularly a matter of importance in sectors such as the defence one (Marchais-Roubelat and Roubelat, 2014) as stakeholders may modify the course of processes through massive physical destructions, which push to "think the unthinkable" and act according to the "unthinkable".

As a result, such a moving strategic foresight approach may be appropriate in organizations that have to cope with truly rapid changes or risks where moving strategies and operations have to be embedded in moving scenarios. Standard methods would thus need to be supplemented, as the value of strategic foresight, such as the one of scenario implementation, has been questioned (Inayatullah, 2009). Nevertheless, considered as a "valued managerial competence" (Bradley MacKay and Constanzo, 2009), strategic foresight would incorporate the ability to transform together with the ability to reframe. Rather than focussing on a technique or method, strategic foresight would need a moving foresight behaviour, while Bergson had noticed it is easier to focus on fixed points, such as frames or end-states.

For research on scenario methodology, a moving approach of scenarios suggests three directions to explore how to introduce moving stakeholders, moving scales and a moving conception of time. While moving, scenarios give sense to events and challenge plausibility. Weick's works have been used in futures literature (Roubelat, 2006; Ramirez and Selin, 2014) to point out the social construction of sensemaking, including stakeholders' views (Wright and Cairns, 2011; Cairns *et al.*, 2013). These social constructions and stakeholders' views move in time so that the meaning of events is not the same at the moment they occur and in a long view perspective. As switches and distortions modify the ongoing action process, stakeholders' views, as well as the nature and the roles of stakeholders, have to be reassessed according to relating transformations. As a result, stakeholders cannot be fixed points and their transformations in action processes appear to be a key direction for scenario methodology and ontology. Behind such transformations, dominance shifts could be explored from two directions. Game theory (Harsanyi, 1977) as well as action process literature (Marchais-Roubelat, 2000) suggest paying attention to weak and strong dominance, which could also meet Granovetter's strength of weak ties (Granovetter, 1973). In action-based scenarios, dominance would never be established, as scenarios can be challenged or change in nature as a strong dominance can mutate into a weak one or the contrary, or disappear. Recent exploratory works also emphasized that dominance relationships between stakeholders shape criss-cross networks of strong and weak dominances that change according to action process phases (Marchais-Roubelat and Roubelat, 2013).

Moving in time questions the use of horizons in scenario methodology, as horizons cannot be fixed in action processes. From its ancient Greek etymology, the concept of horizon relates to *ὁρίζω*, which means to fix the boundaries. In scenario methodology, the boundaries relate to the cone of plausibility, which reduces the scope of scenarios to be investigated and provides a scale for the scenarios to be framed. While distorting the boundaries, either in space and time, moves design scale shifts leading to upscale or to

downscale the scope of the lens to adapt the move understanding. This does not mean to develop a multilevel analysis, as it has been suggested in longitudinal studies (Pettigrew, 1990) as well as in futures studies (Geels, 2005). The concept of multilevel supposes that different levels may be designed and interact to organize the worldview, while movements design their own relative spaces. The function of the horizon as a landmark for scenario methodology to emphasize paradigm shifts would be modified, as movements endlessly create rule modifications to be explored. The duration of the scenarios would thus become a key issue of foresight processes as some of them would be ephemeral (Roubelat *et al.*, 2015).

In the action-based approach, time increments and sequences cannot serve to explore movements, as they are based on boundaries such as time limits. At first glance, time issues appear primarily in stalemates and phase lags, as they express time gaps. Such time gaps are however only the results of differential rhythms that give different senses to action processes. Stalemates and phase lags are specific cases of the variability of the duration of scenarios, which appear as strategic issues to be managed by stakeholders, either to move out of the scenario or to play with the duration of the scenario. When the duration of the scenario is not a primary matter of interest, changes in rhythms might be perceived as a rule shift. From an ontological point of view, this questions the nature of time in scenarios, which could lead to explore either various lived times in a scenario or Hall's polychronic time (Hall, 1983), as some stakeholders would simultaneously play different scenarios.

5. Conclusion and further research: bridging the gap between theory and practice

To supplement scenario methodology, action-based scenarios propose to explore ongoing processes and to look beyond end-states from the analysis of switches between scenarios and from the distortion of scenarios. To pay attention to movements between scenarios and to the transformations of the scenarios, concepts, such as switch, transfer, oscillation and phase lag, help to raise dominance and scale shift issues, as well as irreversibilities to be managed by stakeholders in action processes. From such perspectives, scenarios have to be designed, extended and manipulated without boundaries to look for new strategies and new movements, beyond end-states as well as beyond robustness and flexibility. Such an approach might be viewed as a rational systematic exploration of prospective movements beyond the cone of plausibility. Looking for distortions or transgressions might also lead to consider scenarios as symbols of movements. In that case, a moving strategic foresight approach would be an exploration inviting to switch moving complementary worldviews and to distort them, as well in foresight exercises as in managerial competences.

To provide an innovative thinking about the future, this paper suggested looking forward from the scenario considered as a point of departure. A scenario would be thus distorted to explore transfers, stalemates, oscillations and phase lags. In theory, such an approach would be endless, as prospective movements may be boundless, which meets Sarpong, Mac Lean and Alexander's approach of strategic foresight, considered as an "ongoing flexible organizational practice" beyond end points (Sarpong *et al.*, 2013). In practice, it aims to provide new research about movements that transform scenarios, strategies and stakeholders. It would aim to create a missing part to be added, like a Greek "symbolon". If the symbolic side of scenarios has been pointed out (Schwartz, 2009), research is still at its beginning to study how scenarios as symbols would differ in time and space, according to their fields of implementation and to the team involved in the process. Foresight processes such the ones designed from expert-based futures methods have been reported to be rituals relating to various functions, actors and biases (Marchais-Roubelat and Roubelat, 2011b). Their symbolic evolutions, as well as the related myths, would be fields of research too, as scenarios and strategic foresight processes need to be

supplemented and transformed over time. Beyond rituals, strategic foresight would be moving in iterative processes to challenge the boundaries of plausible futures, bridging the gap between theoretical ever-changing processes and the moving rhythms of actions.

References

Aunger, R. (2007), "Major transitions in 'big' history", *Technological Forecasting and Social Change*, Vol. 74 No. 8, pp. 1137-1163.

Baburoglu, O. (1988), "The vortical environment: the fifth in the emery-trist levels of organizational environments", *Human Relations*, Vol. 41 No. 3, pp. 181-210.

Berger, G. (1957), "Sciences humaines et prevision", *La revue des deux Mondes*, Vol. 3 No. 1, pp. 3-12.

Berger, G. (1964), *Phénoménologie du temps et prospective*, PUF, Paris.

Bergson, H. (1938), *La pensée et le mouvant*, PUF, Paris.

Bishop, P., Hines, A. and Collins, T. (2007), "The current state of scenario development: an overview of techniques", *Foresight*, Vol. 9 No. 1, pp. 5-25.

Bradfield, R., Wright, G., Burt, G., Cairns, G. and Van Der Heijden, K. (2005), "The origins and evolution of scenario techniques in long range business planning", *Futures*, Vol. 37 No. 8, pp. 795-812.

Bradley MacKay, R. and Costanzo, L.A. (2009), "Introduction", in Costonzo, L.A. and Bradley MacKay, R. (Eds), *Handbook of Research on Strategy and Foresight*, Edward Elgar, Cheltenham, pp. 1-12.

Burt, G. (2007), "Why are we surprised at surprises? Integrating disruption theory and system analysis with the scenario methodology to help identify disruptions and discontinuities", *Technological Forecasting and Social Change*, Vol. 74 No. 6, pp. 731-749.

Cairns, G., Ahmed, I., Mullett, J. and Wright, G. (2013), "Scenario method and stakeholder engagement: critical reflections on a climate change scenarios case study", *Technological Forecasting and Social Change*, Vol. 80 No. 1, pp. 1-10.

de Jouvenel, B. (1967), *The Art of Conjecture*, Basic Books, New York, NY.

Emery, F. and Trist, E. (1965), "The causal texture of organizational environments", *Human Relations*, Vol. 18 No. 1, pp. 21-32.

Flechtheim, O. (1966), *History and Futurology*, Verlag Anton Hain, Meisenheim am Glan.

Geels, F.W. (2005), "Processes and patterns in transitions and system innovations: refining the co-evolutionary multi-level perspective", *Technological Forecasting and Social Change*, Vol. 72 No. 6, pp. 681-696.

Georghiou, L. and Harper, J.C. (2013), "Rising to the challenges: reflections on future-oriented technology analysis", *Technological Forecasting and Social Change*, Vol. 80 No. 3, pp. 467-470.

Granger, G.G. (1995), *Le probable, le possible et le virtuel*, Odile Jacob, Paris.

Granovetter, M. (1973), "The strength of weak ties", *American Journal of Sociology*, Vol. 78 No. 6, pp. 1360-1380.

Hall, E.T. (1983), *The Danse of Life*, Doubleday, New York, NY.

Harsanyi, J.C. (1977), *Rational Behavior and Bargaining Equilibrium in Games and Social Situations*, Cambridge University Press, New York, NY.

Hines, A. and Bishop, P. (Eds) (2006), *Thinking about the Future: Guidelines for Strategic Foresight*, Social Technology, Washington, DC.

Inayatullah, S. (ed.) (2009), "Scenario symposium", *Journal of Futures Studies*, Vol. 13 No. 3, pp. 75-156.

Jungermann, H. (1985), "Inferential processes in the construction of scenarios", *Journal of Forecasting*, Vol. 4 No. 4, pp. 321-327.

Kahn, H. (1962), *Thinking about the Unthinkable*, The Horizon Press, New York, NY.

Kahn, H. (1966), "The alternative world futures approach, Hudson Institute, Croton-on-Hudson", Partly reprinted in Aligica, P.D. and Weinstein, K.R. (Eds), *The Essential Herman Kahn: In Defense of Thinking*, Lexington Books, Laxham, pp. 181-197.

Kahn, H. and Wiener, A. (1967), *The Year 2000*, McMillan, New York, NY.

Kuhn, T. (1962), *The Structure of Scientific Revolutions*, 2nd ed., The University of Chicago Press, Chicago.

List, D. (2004), "Multiple pasts, converging presents, and alternative futures", *Futures*, Vol. 36 No. 1, pp. 23-43.

McCann, J. and Selsky, J. (1984), "Hyperturbulence and the emergence of type 5 environments", *The Academy of Management Review*, Vol. 9 No. 3, pp. 460-470.

Mannermaa, M. (1991), "In search of an evolutionary paradigm for futures research", *Futures*, Vol. 23 No. 4, pp. 349-372.

Marchais-Roubelat, A. (2000), *De la decision à l'action: Essai de stratégie et de tactique*, Economica, Paris.

Marchais-Roubelat, A. (2012), "Contracts to frame sustainable futures: the rational and symbolic sides of contract functions and dysfunctions", *Society and Business Review*, Vol. 7 No. 1, pp. 50-64.

Marchais-Roubelat, A. and Roubelat, F. (2008), "Designing action based scenarios", *Futures*, Vol. 40 No. 1, pp. 25-33.

Marchais-Roubelat, A. and Roubelat, F. (2011a), "Futures beyond disruptions: methodological reflections on scenario planning", *Futures*, Vol. 43 No. 1, pp. 130-133.

Marchais-Roubelat, A. and Roubelat, F. (2011b), "The delphi method as a ritual: inquiring the delphic oracle", *Technological Forecasting and Social Change*, Vol. 78 No. 11, pp. 1491-1499.

Marchais-Roubelat, A. and Roubelat, F. (2013), "Dominance and leadership shifts: new direction for transforming Futures", *World Futures Studies Federation 21st conference*, *Bucharest, June*.

Marchais-Roubelat, A. and Roubelat, F. (2014), "Future-oriented technology analysis as an organizing process: proposals from action-based scenarios", *5th International Conference on Future-Oriented Technology Analysis (FTA) – Engage Today to Shape Tomorrow*, *Brussels, November*.

Maslaska, P. and Virtanen, I. (2005), "Theory of futuribles", *Futura*, Vols 2/3 No. 3, pp. 10-27.

Miller, R. (2011), "Being without existing: the futures community at a turning point? A comment on Jay Ogilvy's 'facing the fold'", *Foresight*, Vol. 13 No. 4, pp. 24-34.

Pettigrew, A. (1990), "Longitudinal field research on change: theory and practice", *Organization Science*, Vol. 1 No. 3, pp. 267-292.

Piirainen, K.A. and Gonzalez, R.A. (2015), "Theory of and within foresight – 'what does a theory of foresight even mean?", *Technological Forecasting and Social Change*, Vol. 96 (July), pp. 191-201.

Ramani, A.R. (1993), "Decision, irreversibility and flexibility: the irreversibility effect re-examined", *Theory and Decision*, Vol. 35 No. 3, pp. 259-276.

Ramirez, R., Selsky, J. and Van der Heijden, K. (2008), *Business Planning for Turbulent Times*, Earthscan, London.

Ramírez, R. and Selin, C. (2014), "Plausibility and probability in scenario planning", *Foresight*, Vol. 16 No. 1, pp. 54-74.

Rigby, D. and Bilodeau, B. (2007), "A growing focus on preparedness", *Harvard Business Review*, Vol. 86 No. 1, pp. 21-22.

Roubelat, F. (2006), "Scenarios to challenge strategic paradigms: lessons from 2025", *Futures*, Vol. 38 No. 5, pp. 519-527.

Roubelat, F., Brassett, J., McAllum, M., Hoffmann, J. and Kera, D. (2015), "Probing ephemeral futures: scenarios as fashion design", *Futures*. doi: http://dx.doi.org/10.1016/j.futures.2015.05.004.

Sardar, Z. (2010), "The namesake: futures; futures studies; futurology; futuristic; foresight – what's in a name?", *Futures*, Vol. 42 No. 1, pp. 177-184.

Sarpong, D., MacLean, M. and Alexander, E. (2013), "Organizing strategic foresight: a contextual practice of 'way finding'", *Futures*, Vol. 53 No. 1, pp. 33-41.

Scapolo, F., Miles, I. (2006), "Eliciting expert's knowledge: a comparison of two methods", *Technological Forecasting and Social Change*, Vol. 73 No. 1, pp. 679-704.

Schoemaker, P. (2002), *Profiting from Uncertainty*, The Free Press, New York, NY.

Schwartz, J.O. (2009), "The symbolism of foresight processes in organizations", in Costonzo, L.A. and Bradley MacKay, R. (Eds), *Handbook of Research on Strategy and Foresight*, Edward Elgar, Cheltenham, pp. 82-89.

Slaughter, R. (1993), "Futures concepts", *Futures*, Vol. 25 No. 3, pp. 289-314.

Taylor, C.W. (1993), *Alternative World Scenarios for A New Order of Nations*, Strategic Studies Intitute, US Army War College, Pennsylvania.

Van de Ven, A. and Sun, K. (2011), "Breakdowns in implementing models of organizational change", *Academy of Management Perspectives*, Vol. 25 No. 3, pp. 58-74.

Van Notten, P., Rotmans, J., van Asselt, M. and Rothman, D. (2003), "An updated scenario typology", *Futures*, Vol. 35 No. 5, pp. 423-443.

Wright, G. and Cairns, G. (2011), *Scenario Thinking: Practical Approaches to the Futures*, Palgrave Macmillan, New York, NY.

Wright, G. and Goodwin, P. (2009), "Decision making and planning under low levels of predictability: enhancing the scenario method", *International Journal of Forecasting*, Vol. 25 No. 4, pp. 813-825.

About the authors

Dr Anne Marchais-Roubelat is an Associate Professor at the Cnam-Paris where she is responsible for the research methodology seminar of the PhD in foresight-innovation-strategy-organization. Her research areas include decision and action processes, strategic management of public and private organizations, foresight processes and methods. She is a board member of *Flux*, *International Journal of Research in Networks and Territories*.

Dr Fabrice Roubelat is an Associate Professor at the University of Poitiers – Graduate School of Business. His fields of research include foresight methods and processes, strategic management and innovation strategies. He is a board member of *Futures* and *Stratégique* and is the Editor of *Prospective et Stratégie*. Fabrice Roubelat is the corresponding author and can be contacted at: fabrice.roubelat@univ-poitiers.fr