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NORTH-HOLLAND

# The Art of Scenarios and Strategic Planning: Tools and Pitfalls

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## ABSTRACT

The term *strategy* has been misused and even abused. Worse, the word *scenario* is often confused with *strategy* to the point that clarification is needed if we are to understand one another. As a prolongation of the work done by the Rand Corporation in the 1960s, strategic planning, management and *prospective* approaches have been developed to help organizations master change. Over the past 25 years, we have contributed by creating or further developing various methodologies and procedures such as the Mactor and MICMAC methods for use in scenario building. These tools are doubly powerful in that they stimulate the imagination, reduce collective biases, and promote appropriation. One of the main functions of the strategic futures exercise is to eliminate two errors that we usually describe as the “hammer’s risk” and the “nail’s dream.” In other words, we forget what a hammer’s function is when staring at a nail (the nail’s dream) or we know how to use a hammer and imagine that every problem is like a nail (the hammer’s risk). In our case, we strive to give simple tools that may be appropriated. However, these simple tools are inspired by intellectual rigor that enables one to ask the right questions. Of course, these tools do not come with a guarantee. The natural talent, common sense, and intuition of the futurist also count! © 2000 Elsevier Science Inc.

## Introduction

Anticipation is not widely practiced by decision makers because when things are going well, they can manage without it, and when things are going badly, it is too late to see beyond the ends of their noses. Fast action is already urgently required! Yet reaction is not an end in itself. Although desirable in the short term, it leads nowhere if not directed towards the firm’s long-term objectives. As Seneca said, “there is no favourable wind for the man who knows not where he is going.” Action becomes meaningless without a goal, and only anticipation points the way to action and gives it both meaning and direction.

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Similarly, *la prospective*<sup>1</sup> cannot generally be dissociated from strategy; hence, the term *strategic prospective* [1]. *Strategic prospective* is not only an exploratory approach (strategic anticipation), but also a normative one. Continuing the tradition of strategic planning and strategic management, *strategic prospective* emphasizes the importance of long-range and alternative thinking in strategic decision-making processes.

However, the complexity of strategic problems, and the need to resolve them collectively means using methods that are as rigorous and participatory as possible to recognize the problem and find acceptable solutions. Of course, we must keep in mind the limits imposed by formalization and remember that people are guided by intuition and passion as well as logic. Our models are inventions of the mind that represent a world unwilling to remain locked up in a cage of equations. And all the better, because without this freedom, any will driven by desire would lead nowhere! As a result, our conviction is: use all the powers of reason while remaining aware of both the inherent limits and virtues. Intuition and reason are not opposite, but complementary faculties.

People cannot be reduced to a rational mind (the left hemisphere); they are also driven by the emotional faculties (the right hemisphere). It is time we stopped opposing intuitive vision and rational thinking, because both are necessary. The choice depends on circumstances. Rational and heuristic schools of scenario planning only appear to be in opposition, whereas, in fact, they are complementary. A sound initial reflection, imbued with relevance and consistency, reinforces the efficiency of action and reaction in the face of events. The same applies to reflexes; they are always better after an intensive workout.

### **Strategic Planning, Strategic Management, and the Strategic Prospective Approach: How Are They Different?**

The concepts of *prospective*, strategy, and planning are intimately linked in practice; as a result, strategic planning, strategic management, and the strategic prospective approach will be mentioned throughout this text. Each of these approaches refers to a set of definitions, problems, and methods whose specificity is weak, given the vague terminology.

How then can we make sense of all this? Are these approaches not all very similar to one another? Do we not already have a series of practical methods, all the more useful in that their limits are known? We can answer these questions without hesitation. A toolbox for futures studies and strategic analysis does exist. Informed managers would be wrong to deprive themselves of the toolbox, as a common language could thus be created; the power of collective thought, increased, and the inevitable biases, reduced. To do this, however, there must be a return to the fundamental concepts and their history.

To be fruitful, the marriage between *la prospective* and strategy must be a part of daily life. It must be appropriated by all the actors involved, from the top of the hierarchy to the bottom. Although the union of *la prospective* and strategy may have been inevitable, it has certainly not cleared up any of the confusion in genres and concepts. Yet the ideas are much closer than is generally admitted. Thus, the definition of planning put forward by Ackoff “to conceive a desired future as well as the practical

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<sup>1</sup> We use the French term *la prospective* where no appropriate translation in English is possible. To facilitate reading, the French word appears in italics at the beginning of this document. *Prospective* refers to a preactive and proactive approach, which is described later. The English term *foresight* is perhaps the closest translation, yet the idea of proactivity is less present.

means of achieving it” [2] in no way differs from the one we suggest for *la prospective* where the dream fertilizes reality, where desire is the productive force of the future, where anticipation sheds light on the preactive and the proactive. How then does one find one’s way around planning and strategic management? I remember Igor Ansoff telling me in 1986, when discussing the choice of a title for my book in English [3]: “you and I are well aware that it’s the same thing, but sales will be better with strategic management.” Every concept goes back to the previous one, putting the accent on an old dimension, which appears all the newer after being neglected, then forgotten. What has been rediscovered with strategic management is that people and organizations are at the heart of the difference between efficient and inefficient firms. A part of the bias introduced by managerial fashions stems from the fact that consultants constantly need to remake themselves to stand out from the competition. Far too often the impression of novelty is acquired at the least cost by renaming an old concept.

Managerial fads come and go, but always have one common denominator—people need to be motivated through new challenges. Of course, the process of getting people involved is considered the goal to be reached, no matter what the outcome. In this way, strategic analysis can generate a synthesis of collective commitment, contrary to the ideas expressed by Henry Mintzberg [4]. Indeed, the real difficulty lies not in making the right choices, but in making sure that all the participants ask themselves the right questions. A problem well asked and shared by those concerned is already half solved. This is exactly what Michel Crozier meant when he said “the problem is the problem!”

The rich heritage of strategic analysis remains with us. For example, the classical analysis using threats and opportunities coming from the general environment shows that we cannot limit our analysis to the competitive environment in the name of short-term profits, as the early writings of Michael Porter might lead us to believe [5]. The fact that many uncertainties hang in the balance within the general context, especially over the long term, underscores the need for broad scenario building to clarify the strategic options available and to ensure continued development.

The management market has been flooded by tools and approaches designed abroad, mainly in Japan and the USA. Indeed, many American firms actually became victims of Strategic Business Unit (SBU) approaches. In fact, the relative or even absolute decline of entire sections of American industry, in comparison with Japan and Europe during the 1960s and 80s, made moot any debate over a classic American approach. As Marc Giget [6] put it, “The revival in the 90s was generated from analyses labelled Made in America which were inspired directly by foreign models.” Hence, managers rediscovered the virtues of positioning themselves against the best (*benchmarking*), the value of a complete rehaul of processes and structures (*reengineering*), as well as the importance of sticking to the basics (*downsizing*), and lastly, the power of innovation when it comes from the company’s macrocompetences. Therein lies the difference between winning and losing companies, as Hamel and Prahalad point out: “The conclusion was obvious: some management teams simply showed more foresight than others. Some managed to imagine products, services and entire sectors of economic activity that did not yet exist and they sped up their arrival. They certainly did not waste time pondering how to position their firm within the existing competitive environment because they had already created new environments. Other companies, the so-called laggards, worried more about preserving the past than conquering the future” [7].

Let us look at the terms employed above. Strategy uses foresight and innovation; whereas prospective uses preactivity and proactivity, but we are talking about the exact same thing.

Given this similarity, the term *strategic prospective* has been circulating since the late 1980s, especially in French (*prospective stratégique*). Yet, we wonder how else a strategist could operate any other way than “seeing far, wide, and deep while taking risks and thinking about humanity”? We continue paraphrasing Gaston Berger [8], who adds that “looking at the future disturbs the present.” From this last point we firmly conclude that anticipation encourages action.

By now we are convinced that *la prospective* is often strategic, if not through its outcome at least through its intentions and, similarly, strategy calls upon prospective to clarify choices made with the future in mind.

#### THE ABUSIVE USE OF THE TERM STRATEGIC

The so-called “rise and fall of strategic planning” has not exhausted people’s interest. In fact, there is no risk of a fall because of the independent nature of each of its constituents. “An organisation can plan (take the future into consideration) without actually committing to planning (a formal procedure) even if it does draw up some plans (explicit intentions).” In reality, the issue is not really planning, but rather the manner in which planning is carried out. The graft of strategic planning only takes root if it is integrated into the corporate culture and identity. The wheels of development depend not only on logic, but also on human emotion and behavior. Hence, the idea of strategic management, which is almost a pleonasm according to Boyer and Equilbey’s definition of management [9]: “the art of management is to make the organisation serve strategy.” Yet management in itself does not constitute a strategy. Strategy shapes management but also supposes objectives and related tactics (contingent decision making). One wonders how authors as serious as Mintzberg reject these distinctions while quoting Rumelt: “One person’s strategy is another’s tactic.” They are content to use “the term strategic as an adjective describing something relatively important.” It is high time that these concepts be clarified so that the same word does not have different meanings, and that different things are not named the same.

For traditional authors, such as Lucien Poirier [10] and Igor Ansoff [11], the notion of strategy refers to a firm’s action on its environment and reflection on that action. Without hesitating, Lucien Poirier used the term *stratégie prospective*. The two notions are distinct, but often associated. However, some authors, including Fabrice Roubelat [12], maintain that prospective has two sides to it. Roubelat bases his comments on Jacques Lesourne, who said that “a strategic decision is either one that creates an irreversible situation for the entire organization or one that anticipates an environmental change apt to provoke such an irreversible situation.” In other words, according to Lesourne, “a strategic decision would likely be a decision that forces the organization to ponder its very existence, independence, mission, and main field of activity” [13]. In short, this decision exists for a specific company, and according to this definition, general forecasting sessions would not have any strategic value for the actor/company involved.

The main advantage of these rigid definitions is that they avoid the use of the word strategic to qualify anything that seems important. Of course, prudence and common sense enter here, so that prospective is not limited to asking about risks of rupture and that strategy is not reduced only to decisions of an irreversible nature for the company. It is true that the borders are fuzzy and impossible to redraw completely. The same may be said for decisions, for as Jacques Lesourne once put it: “major decisions are rarely made, they become increasingly improbable as the small decisions accumulate.”

For any organization, prospective is not philanthropy, but rather reflection with a view to clarifying action, especially action of a strategic nature.

## FROM DESIRED FUTURES TO THE REALITIES OF STRATEGY

It is always tempting to take desires for reality. Although visions of the future or scenarios appear desirable, the choices and strategic direction of an organization do not necessarily match a single proactive vision. One must also be preactive and prepared for expected changes to the organization's future environment.

Of course, not all scenarios are equally probable or desirable. There is an important distinction to be made between scenarios of the general environmental and scenarios of actors' strategies. The success of the word scenario has led to abusive use of the term and confusion with the term strategy.

It is, therefore, prudent to separate an exploratory phase of identification of future stakes from a normative phase. A normative phase is required to define strategic choices, in other words, choices that are possible and desirable in order to keep on course. The distinction between these two phases is all the more justified in that the choice of strategies is conditioned by the uncertainty weighing on the scenarios and by the contrast among the most probable of them.

Scenarios, which project both wishes and fears regarding the future, must not be confused with the choice of strategic options. Here, willpower is in keeping with the principle of reality of foreseeable development in a company's environment. It is especially important to avoid confusion in that it is not the same internal actors who are on the front lines. The anticipation phase of organizational change must be collective, and implies the involvement of the greatest number. At this stage, the strategic prospective toolbox suggests an open-minded think tank on future stakes and, possibly, an assessment of strategic options. On the other hand, for reasons of confidentiality and responsibility, the strategic choice phase is limited to a small number of people who are generally members of the company's executive committee. This last phase, therefore, does not require any specific method.

Decisions must be made after consultation and consensus among executives, taking into account the form of management proper to the corporate culture as well as the temperament and personality of the executives.

Tools are useful for comparing choices, but cannot replace freedom of choice. The methodologist can dream of constructing rational tools that link prospective and strategy on paper, but will come up against resistance and natural rejection from flesh-and-blood people driven by passion who certainly have no intention of being subjected to machines.

*From Scenarios to Strategies*

Unfortunately, there are no statistics for the future, and often personal judgement is the only information available to deal with the unknown. It is, therefore, necessary to gather other people's opinions before forming one's own, and then to place bets in the form of subjective probabilities. As in the case of a casino gambler, it is only on the basis of a series of games that one can judge the quality of his bets. Similarly, the competence of experts is often questioned. Our conviction is simple: inasmuch as an expert represents an opinion typical of one group of actors, it is interesting to consider that expert's point of view. Indeed, it is from this vision of the future, be it right or wrong, that these actors will chart their course.

The uncertainty of the future can be appraised through the number of possible scenarios within the field of probables. In principle, the higher the number, the greater the uncertainty. This is in principle only, however, because the difference in content between the scenarios must also be considered: the most probable can be very similar or highly contrasted. Experience shows that, in general, a third of the total possible

scenarios is enough to cover 80% of the field of probables; i.e., 10 scenarios out of 32 possibles for five fundamental hypotheses.

If uncertainty is low, i.e., if a limited number of closely related scenarios cover the major part of the field of probables, one could opt for either: a risky strategy (by betting on one of the most probable scenarios), or a robust strategy that would resist most probable developments.

On the other hand, if uncertainty is high (over half the possible scenarios are required to cover 80% of the field of probables, or when the most probable are highly contrasted), it would be preferable to adopt a flexible strategy containing a maximum of reversible choices. The danger here, however, is refusing to take a risk by adopting a strategy that rejects risky options that could, however, turn out to be very profitable, and falling back on choices with gains as low as the risks.

#### FIVE BASIC QUESTIONS

Like two lovers locked in an embrace, prospective and strategy remain distinct entities, and it is necessary to distinguish between: (1) a time for anticipation, in other words, the study of possible and desirable changes; and (2) a time to prepare action: in other words, the working out and assessing of possible strategic choices so as to be prepared for expected changes (preactivity) and provoke desirable changes (proactivity).

The dichotomy between exploring and preparing a course of action implies the five following questions: (Q1), what can and might happen? (Q2), what can I do? (Q3), what am I going to do? (Q4), how am I going to do it? and an essential prequestion (Q0), who am I? All too often ignored, the last question is the starting point of Marc Giget's strategic approach (1998). However, this preliminary identification echoes Socrates' famous lesson, "know thyself."

Only the prospective approach with a preactive and proactive attitude focuses on the question "what can and might happen?" (Q1) It becomes strategic when an organization asks itself "what can we do?" (Q2) Once these two questions have been answered, the strategy goes from "what can we do?" (Q2) to two further queries: "what are we going to do?" (Q3), and "how are we going to do it?" (Q4). Hence, the overlapping between prospective and strategy. There are, of course, future studies containing no clear strategic character for an actor as well as strategic analyses of firms or sectors whose interest in the future is embryonic or even nonexistent. For the sake of clarity, the expression "strategic prospective"<sup>2</sup> will, therefore, be reserved for futures studies having strategic ambitions and end points for those undertaking them.

#### A Toolbox for Scenario Planning

Although our problems may be complex, we are not without means. Yesterday's tools are still useful today. Indeed, the kind of problems encountered, even if the world changes, often remain similar. If we ignore our accumulated heritage, we deprive ourselves of powerful levers, and waste a great deal of time reinventing the wheel. The memory of our methods must be kept alive so as to improve upon them [14, 15].

#### THE NAIL'S DREAM AND THE HAMMER'S PITFALL

Of course, the utility of the tools used in the strategic prospective approach is fivefold: stimulate the imagination, reduce inconsistencies, create a common language, structure collective thought, and enable appropriation by decision makers. Their limits and the illusions of formalization must not, however, be forgotten: no tool should serve

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<sup>2</sup> Some authors would also call it "strategic anticipation."

as a substitute for reflection or a check on freedom of choice. We are, therefore, fighting to eliminate two symmetrical errors: (1) being unaware of the hammer's existence when meeting a nail that has to be driven in (the nail's dream), or (2) conversely, with the pretext of knowing the function of a hammer, concluding that every problem is similar to a nail (the hammer's pitfall). We are involved in a paradoxical fight: distributing tools and spending a great deal of our time dissuading neophytes from using them inappropriately.

Of course, the tools we are describing here do not pretend to equal the scientific calculations carried out in the physical sciences, for example, determining material resistance. Instead, we seek to use the most objective means possible to ascertain various realities fraught with unknowns. Unfortunately, the correct use of these tools is often hindered by limitations of time and of other means inherent to any collective thinking process. The use of such tools stems from a need for intellectual rigor, primarily so that we ask the right questions and reduce the possibility of inconsistency in our logic. However even if using these tools may stimulate the imagination, they do not guarantee any form of creation. A talented forecaster also depends on natural gifts, such as intuition and common sense. Just as prospective requires rigor to approach complexity, it needs sufficiently simple tools that can be appropriated by the users.

Whichever approach selected, it is advisable to start the process with a 2-day seminar of training/practice to introduce the ideas of strategic prospective. This seminar enables participants to become familiar with the main concepts and tools of scenario planning. The aim of this training stage, which can involve dozens of people, is to immerse them in prospective thinking as a prelude to strategic mobilization. Prospective workshops give participants the opportunity to work together to identify and prioritize the main future stakes facing the firm within its environment, both national and international. At the end of the 2-day session, participants are able to specify the priority objectives, as well as set up a schedule and method to follow when organizing their own committee on strategic prospective.

To help managers in these methodological choices, we have organized the toolbox for scenario planning according to a typology of problems (initiating and stimulating the whole process of strategic prospective, asking the right questions and identifying the key variables, analyzing issues and actors' games, scanning the field of possible futures and reducing uncertainties, establishing a complete diagnosis of the firm within its environment, identifying and assessing strategic choices and options). An inventory of the toolbox listing the methods by relevant problem follows. Naturally, this list is not exhaustive. Other equally effective tools exist, but we highlight those that we have developed and used successfully. In a sense, we are the guarantors of the rigor and the increase in communication that these tools create when used with care, caution, and enthusiasm.

#### STRATEGIC PLANNING USING SCENARIOS

Strategic prospective continues applying anticipation to action as this approach spreads through firms and the management sector. The last 2 decades have seen the popularity of strategic planning through scenarios soar, especially among large corporations in the energy sector, for example, Shell and Elf. This trend appears to be a reaction to the effect of oil shocks past and present.

Since the early 1980s we have sought to develop a high degree of potential synergy between prospective and strategy. The resulting synthesis was an integrated approach: strategic planning using scenarios (Figure 1).

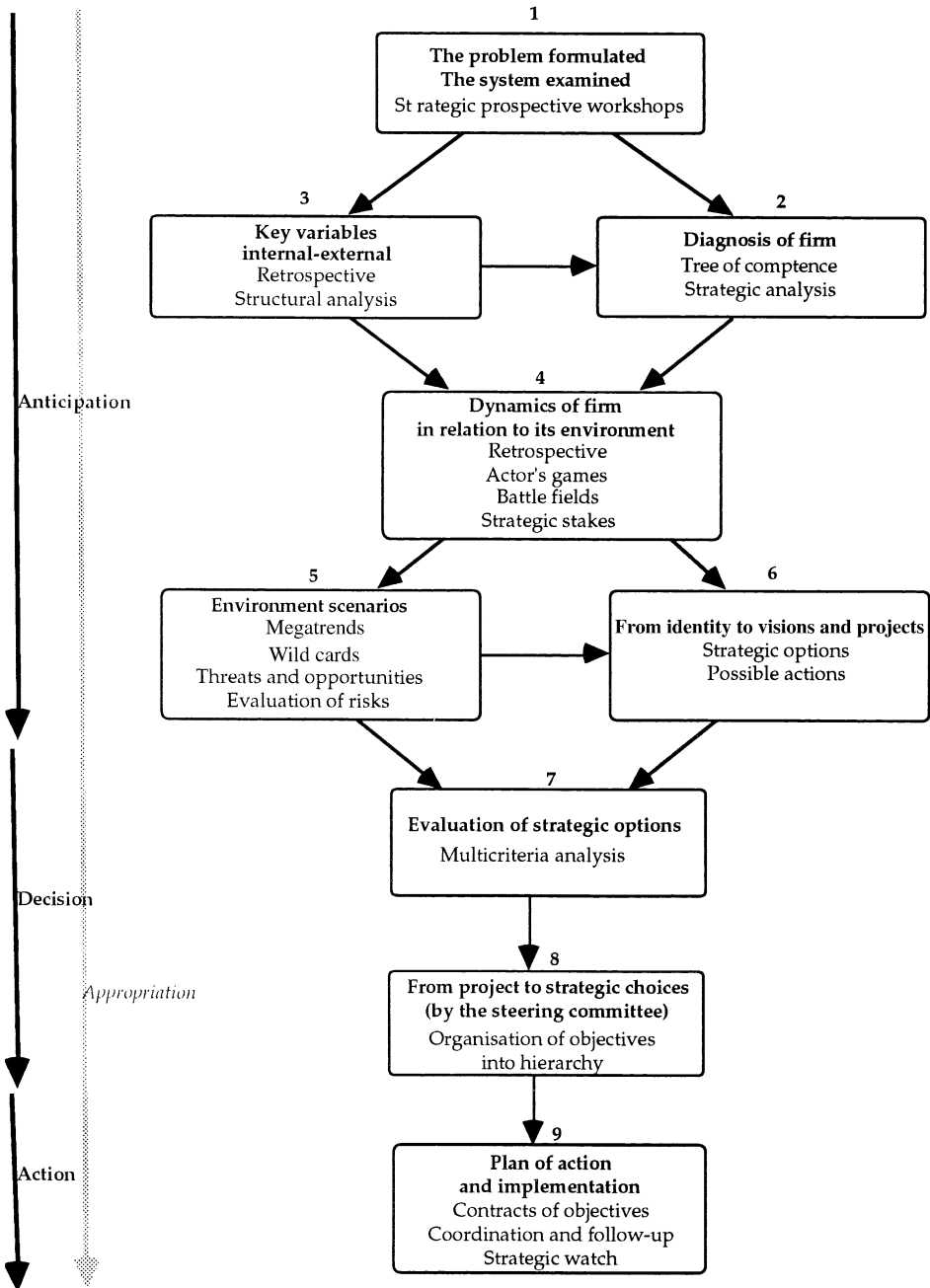


Fig. 1. Scenario planning: Complete process.

The objective of this approach is to suggest strategic orientations and actions based on a firm's competencies according to scenarios that reproduce the general and competitive environments.

Anticipation sheds light on action. Megatrends and wild cards disrupt the present, thus stressing the need for strategy. Of course, strategy does question possible choices



and the dangers of irreversibilities. In addition, since the 1980s, strategic anticipation has made reference to scenarios, as Michael Porter's [16] works demonstrate. Nevertheless, these approaches and tools often remain separate.

However, since 1989, we have been bringing them closer together using the competence trees developed by Marc Giget as a base. Naturally, the strategic process, defined using competence trees, lacked formal perspective for the competitive environment. Hence, the mutually beneficial marriage between anticipation and strategy was arranged by matching up the scenario method and competence trees method.

Before presenting the complete process in nine phases, let us review the definition and origin of the scenario method.

A scenario is the set formed by the description of a future situation and the course of events that enables one to progress from the original situation to the future situation. The word scenario is often abused, especially when used to describe any set of hypotheses. Of course, these hypotheses must simultaneously be pertinent, coherent, plausible, important, and transparent to meet all our criteria.

Two major categories of scenarios can be identified:

(1) exploratory: starting from past and present trends and leading to likely futures; and (2) anticipatory or normative: built on the basis of alternative visions of the future they may be desired or, on the contrary, feared. They have been designed "retroprojectively."

These exploratory or anticipatory scenarios can, moreover, indicate a trend or be contrasted, depending on whether they take into account the most likely or extreme developments.

Somewhat surprisingly, there is no single approach regarding scenarios. They were introduced into future studies by Herman Kahn in the United States, and by Datar in France. Today, the scenario method that we have developed at Sema and the Cnam, and that of the SRI (from the name of the American consulting firm) are the most frequently adopted approaches. The phases in these two methods are very similar.

The main stages of the scenario method are as follows: (1) identify the key variables which is, in particular, the purpose of structural analysis (Figure 2); (2) analyze actor games so as to ask key questions for the future; and (3) reduce uncertainty on key questions, and pick out the most probable environmental scenarios using experts' methods.

Phases 3, 4, and 5 can be found, as they stand, on the left-hand side of the diagram that follows.

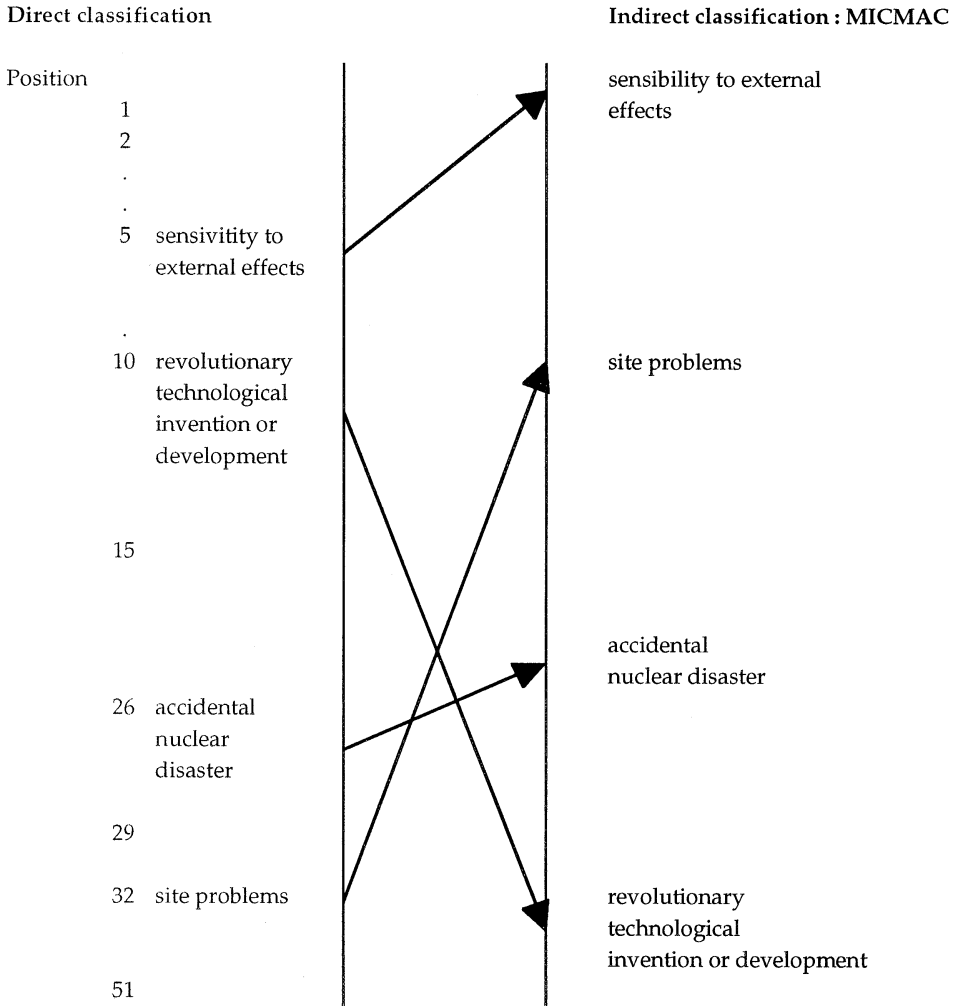
In fact, *the first phase* attempts to analyze the problem posed and to define the system under examination. One must position the prospective process in its socio-organizational context so as to introduce and simulate the whole process by means of prospective strategic prospection.

*Phase 2* is based on a complete X-ray of the firm, from know-how to product lines, represented by the competence tree.

*Phase 3* identifies the key variables of the firm and its environment by means of structural analysis.

*Phase 4* seeks to understand the dynamics of the firm's retrospective in its environment, its past development, its strengths, and weaknesses in relation to the principal actors in its strategic environment. The analysis of a firm's battle fields and strategic stakes reveals the key questions for the future.

*Phase 5* attempts to reduce the uncertainty surrounding the key questions for the future. One can use enquiry methods with experts to highlight megatrends, wild cards, and finally to draw out the most likely environmental scenarios.



**Fig. 2. Example—Uncovering Hidden Variables. Using Structural Analysis and the MICMAC Method.** Structural analysis is a tool for structuring the pooling of ideas. It offers the possibility of describing a system by means of a matrix that combines the constituent element of the system. By studying their interrelationships, the method identifies the main variables that are both influential and dependent, those, therefore, that are essential to the evolution of the system initially through direct (easy to do) classification then through the MICMAC method, which stands for the French acronym roughly translated as Matrix of Cross Impact Multiplications Applied to Classification. The latter, an indirect form of classification is achieved after increasing the power of a matrix. The following example is based on a prospective survey of nuclear power in France and was carried out in 1972 by the C.E.A. (French atomic energy commission). By adopting several viewpoints (political, economic, technological, etc.), the think tank for this survey prepared a list of 51 variables, which should be taken into account. The results obtained are as follows: The variable “sensitivity to external effects” moved up from 5th to 1st position. Thus, since 1972, structural analysis has enabled us to foresee how important group psychology and public opinion would be for the development of nuclear energy. This shift is even more striking in the case of the variable “location problems for the siting of nuclear plants,” which moved up from 32nd position in the first classification to 10th in the second. Thus, the kind of problems that EDF (French central electricity generating board) had to face at Plogoff had been identified almost 10 years before they became a reality.

*Phase 6* highlights coherent visions and projects; in other words, the strategic options compatible both with the firm's identity and the most likely scenarios for its environment.

*Phase 7* is wholly concerned with assessing strategic options; a rational approach would encourage the user to fall back on a method of multicriteria choices, but this is rarely the case; the reflective phase prior to decision and action ends with this phase.

*Phase 8* emphasizes strategic choices, and is crucial because it means moving from thinking to making a decision. The strategic choices and organization of objectives into a hierarchy are the responsibility of a steering committee or its equivalent.

*Phase 9* focuses entirely on implementing the plan of action; this involves contracts of objectives (negotiated or provoked), setting up of a system of coordination and follow-up and the development of a strategic watch-dog (external).

Note that the complete process does not have a totally linear progression. It includes several possible feedback loops, in particular, from phase 7 to phase 2. Implementation of the plan of action and the results of the strategic watch can lead, in certain cases, to the participants' reconsidering the company's dynamics within its environment.

In this complete pattern, the rational framework does not prevent the irrational from operating. Collective appropriation prepares for efficient action without a conflict with the restrictive and partially confidential nature of strategic decisions.

Moving from anticipation and prospective thought to strategic action presupposes appropriation on the part of the actors involved at each and every moment. This is to say that the staff, not only the managing directors, must be involved to the utmost in the different phases without, however, altering the necessarily confidential character of some strategic choices. To move from the act of thinking to action itself, it is necessary to appropriate.

The integrated schema of strategic prospective is designed primarily for companies that can be represented as competence trees. It can also be adopted for work on urban and regional planning. Not surprisingly, we are often asked if the tools most used in corporate forecasting are suitable for regional forecasting. There has been some debate on the issue, including highly negative stances either based on theory or completely unfounded. Yet the facts speak for themselves, as seen in numerous territorial futures studied, for example, the Basque issue, the Ile de la Réunion, Lorraine 2010, the Ardennes plus Vierzon, Toulon, and Dunkerque. The upshot is that these tools may be equally useful in territorial futures studied when the methods are used to structure and organize collective thinking. They actually facilitate communication, stimulate the imagination, and improve logical consistency. There remain, however, numerous other questions in general or sector-based prospective (demography, energy, industry, etc.) for which the traditional scenario method suffices.

#### SELECTED EXAMPLES

They say that a poor workman blames his tools. We say that the choice of tools depends on the problem, context, and usual limits of available time and information. In other words, the sequential approach to using the tools for strategic planning by scenarios as just described is not mandatory. Each tool is functional but its logical follow-up in the sequential approach is rarely carried out. Similarly, the scenario method is rarely carried out from A to Z. There usually is not enough time. Fortunately, the tools can be selected and used either individually or in combination.

In many cases, we encourage tinkering with the toolbox and even innovating with new applications for the same tools to answer questions. Think of the humble screw-driver. It not only works on screws but also pops stubborn beer caps remarkably

well! The following examples illustrate the practical use of tools within the strategic prospective process.

### *Two Examples of Specific Tool Combinations*

At the end of the 1980s, we took part in a forecasting session held by the French armament department (Direction Générale de l'Armement). The project under review was an individual infantry weapon with a horizon line in 2020. We went back to square one with the department's structural analysis that had already been dragging on for 3 years at that point. With the Micmac method, we set out the 57 variables in a hierarchy so that 15 key variables stood out. Upon reflection, the participants saw that nine of these variables were components of the weapon itself (e.g., projectile, aim, energy source), and six other were criteria related to evaluating arms (cost, competitiveness, antipersonnel effects). A morphological analysis of the nine components of the weapon, which could each take several configurations, followed and allowed us to identify 15.552 theoretically possible technical solutions. The combined use of the Multipol method for the multicriteria choices and the Morphol method for the calculation of exclusion and preference restrictions enabled us to decrease the morphological space to 50 then some 20 solutions that were worth examining more closely using additional economic or technical analyses.

Ten years later, one of these solutions made the headlines at a public presentation of the operational prototype. The selected solution: a "polyarm-multiprojectile" model called PAPOP. This model has an indirect line of target and can be hidden while firing specific projectiles upon unmoving, armored, or mobile targets.

At a different forecasting session, this time for the commercial development of the French Electrical company (EdF), the toolbox for strategic prospective, acquired a new, innovative use. The horizon line was the year 2010. The structural analysis of the 49 variables considered led us to identify six key questions, such as energy consumption, competitiveness, and margin of manoeuvre. We then grouped these questions under three categories or three "future battle fields."

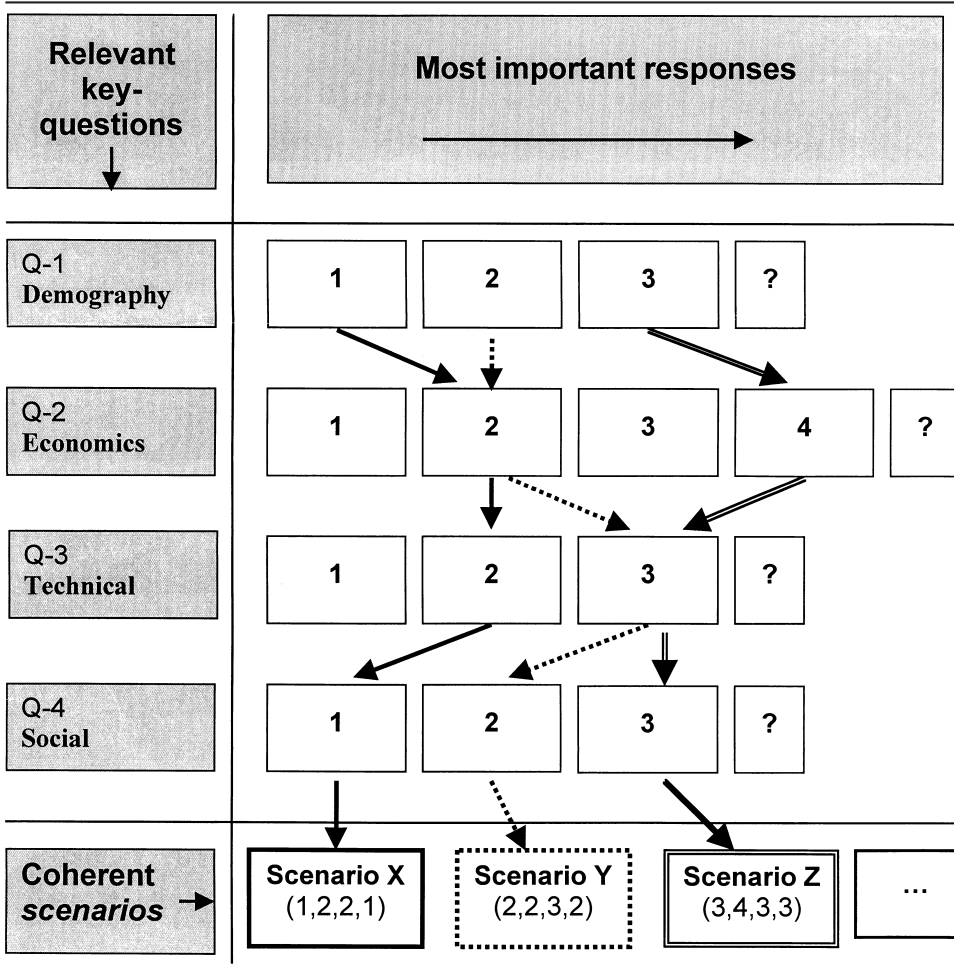
The morphological analysis of the possible answers for each of the six key questions and their various combinations enabled us to select the most probable scenarios. Of course, the Smic-Prob-Expert method had already "probabilized" the scenarios. In parallel, the Mactor method was used with some 20 actors involved in the three "battle-fields." Their strategic positions were later optimized according to the scenarios studied.

### *The Rediscovery of Morphological Analysis*

Morphological analysis experienced a renaissance at the end of the 1980s, and became one of the most used tools. Oddly enough, morphological analysis had long been popular in technological forecasting, but not in economic or sectorial prospective. The following examples show how this tool works well in constructing scenarios (Table 1).

In 1998, the corn (maize) growers association (AGPM) held a session that lasted only 4 or 5 working days. Given this time frame, we turned to morphological analysis for the two classic phases; i.e., the prospective and strategic phases. The initial analysis provided developmental scenarios relevant to the future of corn production and its technical, economic, and legislative environment. Each scenario asks the corn growers strategic questions that may have several different answers. Once again, morphological analysis enabled us to structure the group's thinking on the strategic response profiles that were both the most relevant and coherent.

**TABLE 1**  
**Relevance, Coherence and Plausibility of Scenario-building through Morphological Analysis**



? stands for all other possibilities.  
 At least 320 possible scenarios: 4X5X4X4.

*A Case Study in Scenario Planning<sup>3</sup>*

Axa France, a leading French insurance company, brings together all the French subsidiaries of the Axa Insurance Group. The French units decided to explore future possibilities before drafting the 1996–2000 plan (Table 2). The previous plan (1992–1996) had focused on reorganizing new acquisitions, the fruit of various buyouts, and on improving overall profitability. Because this previous plan stressed organizational goals using the distribution chain, no specific research had been carried out on the company’s environment. Axa’s internal goals had been reached, so the new plan was designed to integrate outside challenges and thus define the strategic axes for the next 5 years. The same plan had to take into account the Axa group’s global objectives, quality, and

<sup>3</sup> Cf. in French, “La planification par scénarios chez Axa,” by Paul Benassouli and Régine Monti, *Futuribles* No. 203, November 1995. This prospective exercise was carried out with members of the French management committee from March 1994 to December 1995, under the authority of the Plan Budget Result.

**TABLE 2**  
**Time Frame of Environmental Scenario Building**

Axa France
(1). Hold prospective workshop: participants acquire analytical methods, identify and hierarchize factors of change affecting Axa France. They select the most influential environmental components for the future of Axa in France (mid-March 1994).
(2). Construct broad scenarios within a small group (April–June 1994).
(3). Synthesize results of the various working groups and construction of the environmental scenarios (June 1994).
(4). Survey evaluating the future of insurance in France (July–September 1994).
(5). Determine probability, select and analyze scenarios (October 1994).
(6). Select the main scenario and identify alternative hypotheses (November 1994).
(7). Present the main scenario and alternative hypotheses to the different subsidiaries (December 1994).
(8). Appropriate and integrate the main scenario and alternative hypotheses according to the subsidiaries (January 1995).
(9). Draw up a plan in each subsidiary (February–June 1995).
(10). Do arbitration and allocation of resources (4th quarter 1995).

profitability requirements plus clarify the strategic axes with a 10-year future time line. For those familiar with the insurance industry, note that this prospective exercise took place 2 years before the AXA UAP merger.

The procedure adopted by Axa France provides a textbook example of how the practice of prospective has developed and how it is integrated into the planning process. Rushed into action, companies have less time to think. Yet, there must be a way to meet the need. How, then, can we hold a relevant, coherent, and realistic session on the uncertainties or major trends of the future? In other words, what can we really achieve in six working meetings?

Actually, for a relatively recently formed group like Axa France, marked by rapid integration, several acquisitions, shifting structures, and heavy decentralization, it would be impossible to carry out the “full procedure” using a specialized department and taking executives away from various subsidiaries for the entire process. On the contrary, the idea was to have the general managers become actively involved. The ultimate goal was that they approach the future with a common vision, and that they pinpoint threats, opportunities, and potential ruptures so that the corporation would be ready to confront unexpected changes and would be prepared to foster desirable changes while combating expected changes. In other words, they wanted to ask what to do if x? and how to handle y? It was, therefore, necessary to identify possible futures and to pinpoint the most probable. In a nutshell, the task was to construct scenarios for the environment of Axa France. The horizon line chosen was 2005.

Given the 9-month time frame, we opted for two basic prospective tools: structural analysis to find key variables and actor role play to explore possible developments. In the end, we used three methods—prospective workshops, morphological analysis, and the Smic Prob-Expert—which enabled us to construct scenarios while respecting the basic conditions of relevance, coherence, plausibility, and transparency. All of the above must be accomplished while using time efficiently and encouraging appropriation.

### **Correct Use of Tools**

Over the past 20 years, the overall, systemic, and long-term state of affairs has become important. In other words, the big picture.

With the exception of the Mactor method for issues analysis and actors games, standard methods of futures research have experienced little significant progress but have been widely distributed by means of multiple applications. It all happened as if practitioners had followed J.-N. Kapferer's recommendation: "An operational imperfection is better than a perfection that it is not." Let us consider game theory as an example of the above. It has certainly made progress theoretically, but remains unapplied in the business world. On the other hand, the Mactor method used in analyzing actors' strategies may not be perfect, but it is certainly operational.<sup>4</sup> Indeed, to tackle a complex world, what are needed are simple and appropriate tools precisely because they are appropriate.

In fact, *la prospective* increasingly takes the form of a think tank, a mobilization of minds in the face of change within the strategic environment. It is enjoying more and more success with regional organizations, local communities, and firms. If some satisfaction may be found in this trend towards greater distribution and appropriation of prospective, a field formerly restricted to specialists, there is also some regret that methodological weaknesses survive, and even thrive. More serious is the marked decline, especially in the United States, in rationality in favor of intuitive approaches whose commercial success does not justify their drawbacks. Indeed, if following procedural rationality [17], a futures study must keep a heuristic approach,<sup>5</sup> as opposed to an algorithmic one or a rough guess. In other words, an approach that does not reject formal tools when useful. From this point of view, constructing scenarios is often presented as mainly "the art of the long view" [18]. But one has to be as masterful as Peter Schwartz to succeed in such an exercise without techniques. The philosophy and steps behind the approach presented by Peter Schwartz are close to those that we advocate, but the technique is all the less appropriate or reproducible due to its absence. This decline in formalization, as we call it, is accompanied by collective amnesia that includes even the forgetting of words and names. Far too many budding prospectives launch themselves into scenario construction without having integrated the accumulated legacy into their work, and then they look surprised when someone speaks to them about morphological analysis or scenario probalization. Little wonder they ask themselves: what is it all about? is this really possible?

Jacques Lesourne's [19] plea for research into prospective was (and still is) all the more justified in that simple tools are often confused with simplistic tools. It should be remembered that the scenario method, as designed over 20 years ago, remains as useful as ever, and has the great merit of imposing intellectual rigor as seen in the qualitative and quantitative analysis of serious trends, retrospective techniques, players games, identification of weak signals, tensions and conflicts, and construction of complete and coherent scenarios.

Some tools specific to futures research, such as structural analysis, are currently experiencing an almost disquieting success for those who have worked on developing them. Structural analysis is too often applied in a mechanical manner that lacks usefulness and works to the detriment of deep thinking. The lesson to be learned from all this is that time is needed before a tool comes into common use (almost 20 years), and even more time is required for it to be used correctly. Users must also be told what to avoid doing when presented with a method in a manual, so that they may use it to the best effect.

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<sup>4</sup> 5M; Godet, P. Chapuy. *Food Safety and the Environment* Lips Working Paper/Cahier du LIPS no. 11, November 1998.

<sup>5</sup> Here we would like to thank Alain-Charles Martinet for his useful comments on an early draft of this toolbox, and especially for the clarification of the incorrect opposition between rational and heuristic methods.

During the preparation of this issue, the need for rigor became all the more apparent as the European Commission in Brussels had just published “Scenarios Europe 2010.” In this report, the authors describe their simplified procedure—“shaping factors, shaping actors”—recognizably borrowed from classic approaches of scenario planning (morphological analysis, identifying key variables) such as the French school approach by Jouvel [20] or Godet [21, 23] or the SRI approach by Wilson [22]. The Brussels report pretends to introduce a specific approach, but just changes a few words of what we, and perhaps other consultants and academics, may have taught them.

#### SCENARIOS: USE AND MISUSE

The very use of the word “scenario” may prove dangerous for the prospective approach. There is always the risk of an approach being swamped by media success with little or no respect for its scientific grounding.

We persist, however, and review two preliminary questions:

(1) does the term “scenario” for any combination of hypotheses or a given analysis, however attractive this may be, confer a degree of future respectability? or

(2) do future studies necessarily require full and detailed scenarios?

The answer is most assuredly: “No!” on both counts. A scenario is not a future reality but a way of foreseeing the future, thereby throwing light on the present in terms of all possible and desirable futures. Reality as the acid test, combined with some concern for efficiency, should be used to guide prospective thinking to gain a better mastery of history. A scenario approach can only be credible and useful if it meets our five prerequisites: relevance, importance, coherence, plausibility, and transparency.

In other words, one must ask the right questions, formulate the right hypotheses clearly, and ascertain the coherence and probability of possible combinations. These are the keys to the future. Without this procedure, one risks leaving out 80% of all possible futures. With modern probability tools, such as the microcomputer package SMIC-Prob-Expert (cf. the insert on iron and steel industry scenarios), it takes only minutes to provide results for a working group.

Oddly enough, certain proponents of the prospective approach refuse to submit their own thoughts on an issue to a system that is akin to a lie detector, or which would at least reveal contradictions in their reasoning. In this case, the six scenarios selected by the experts have an overall plausibility rate of 40% on the basis of simple and conditional probability using the structuring hypotheses. However, when the Smic-Prob-Expert method is used, three much more probable scenarios emerge. Ironically, these scenarios were not identified, let alone selected, by the experts because they went against implicit or shared conventional thinking. Indeed, the Smic-Prob-Expert method reveals group biases that would otherwise remain unsaid (Table 3).

As mentioned above, transparency is the last prerequisite needed to ensure the credibility and usefulness of the scenario method. Here, transparency means full transparency, from A to Z, which implies that: “a clear concept can always be stated clearly.” This should be the case for any problem, for the methods used to solve it, for the reasoning behind it, as well as for the results and conclusions of the scenarios envisaged. Unfortunately, either the simple reading of scenarios proves laborious because the reader must invest considerable effort in ascertaining the prerequisite conditions (relevance, coherence) or the literary quality is so low that the reader finds the text indigestible and sets it aside. Due to a lack of close and critical review, a number of scenarios remain credible somehow, i.e., they are given the benefit of the doubt. It is as if the reader were left feeling guilty about not finishing the text.



**TABLE 3**  
**The Probability of Scenarios for the Iron and Steel Industry**  
**(with Some Surprising Consequences)**

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Between 1990 and 1991, several months of prospective reflection on the iron and steel industry in France on the horizon of the year 2005 enabled participants at Edf (French electrical utility) and Usinor to identify six relevant and consistent scenarios constructed around three general hypotheses: H1 (low GDP growth, below 1.8%); H2 (severe constraints on the environment); H3 (strong competition from other materials).

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Black (S 1)	poor growth in GDP and strong competition from materials
Morose (S 2)	poor growth in GDP with no strong competition from other materials.
Tendential (S 3)	continuation of the current situation.
Ecological (S 4)	strong constraints from the environment.
Pink Steel (S 5)	strong growth of the GDP and competition favourable to steel.
Pink Plastic (S 6)	strong growth of the GDP and competition favourable to other materials.

Use of the Prob-Expert software enables one to pick out only six scenarios, which covered only 40% of the field of probabilities:

S5 Pink steel and S4 Ecology (010) = 0.147

S1 Black (101) = 0.108

S6 Pink plastic (001) = 0.071

S3 Tendential (000) = 0.056

S2 Morose (100) = 0.016

Three new far more probable scenarios thus appeared, which the experts had not even selected, let alone identified, because these scenarios went against implicit or shared conventional thinking. This type of consensus, all the stronger since it remained unstated, is the source of major collective biases.

The three remaining hypothesis configurations (60% of global probability) each have an implementation probability superior to the most probable of the scenarios previously retained.

S7 ecological black (111) = 0.237

S8 Steel green (110) = 0.200

S9 Plastic green (011) = 0.164

The pair (.11.) in the first two hypotheses H1 and H2 had been eliminated because, in a context of sluggish growth, serious constraints from the environment seemed to be an improbable luxury. The pair (.11) had been eliminated because serious constraints from the environment (H2) seemed somewhat favorable for steel, which at the same time was not subject to serious competition from other materials. But why did no one imagine plastics that could be recycled or were even biodegradable as is suggested by scenario (0.11)?

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Without transparency, results will not be adaptable, and will not motivate the actors (also the audience) that we wish to involve through the scenarios. Naturally, the transparency and attractiveness of scenarios do not ensure quality of content. Some scenarios with catchy titles, presented in an emotion-ridden, pleasurable or doomsday style—such as Toffler’s “Future Shock”—can be convincing. Such works are fiction, i.e., a literary genre that per se is quite honorable and often makes for superb reading. One famous example that springs to mind is George Orwell’s *Nineteen Eighty-Four*. Nevertheless, they rarely contain relevant, coherent or even likely scenarios.

By replying negatively to the second question about full and detailed scenarios, we want to make it amply clear that anticipation and scenarios are not synonymous. Too many futures studies become bogged down over time because a group decided to launch into “the scenario method.” But why, we may ask, did they do so? A scenario

is not an end in itself; it only becomes meaningful when its results and implications are embodied in real action. Undertaking a scenario approach is time consuming (12 to 18 months is not uncommon), and there must be several persons involved, to establish a team context and make the process viable. In fact, after three years, the leaders of the OECD Interfuturs team (1976–1979) announced that they had had insufficient time to maximize their use of the scenarios! (cf. J. Lesourne and D. Malkin, 1979) [24]. Of course, we can safely add on an extra year for circulating and valorizing results after the exercise.

In most corporate and administrative organizations, such teams will be required to report within the year. In extreme cases, policy makers may launch a future study that they wish to see finished in a matter of weeks; in which event the prevailing conditions are rarely ideal, yet it is better to light a candle than curse the darkness in this case. Sheer common sense dictates the simple questions that one should raise at the outstart: what can be done in the given time, using the means available? How can it be done in such a way as to be both credible and useful to the decision makers?

From this point of view, it is often advisable to limit the scenarios to several key hypotheses, say four to six. Beyond such numbers, the sheer magnitude of possible combinations is such that the human mind simply gives up. Such straightforward scenarios are used as backgrounds for strategic options such as “what if . . .?” or “what for . . .?” Shortcuts in the scenario approach make it all the more crucial to do some preliminary thinking about the key variables, the trends and the actors’ strategies.

One final difficulty that arises when building scenarios and selecting methods relates to lead times. Even if one had months or a few years to finish the assignment, there is a risk inherent in the startup phase because team members or even the team leader may change as the study progresses. A future study rarely survives after the departure of the initiator. In major organizations—given existing staff mobility factors—it is preferable to limit the length of the project to 1 year, and to plan for interim status reports. It is also advisable to identify a preliminary exploratory phase, during which the elements at stake are identified, and a normative phase, during which the various strategic policy choices are defined in terms of items identified in the preceding phase.

#### THE ART OF REBELLIOUS RIGOR

The challenge of prospective is to keep the freshness of its intellectual rebelliousness while reinforcing the rigor of its approaches. Of course, tried and true methods are already a vital asset. In addition, the rich heritage of strategic analysis and prospective reveals the complementarity and high levels of convergence that exist between these two approaches and the possibility of listing tools for collecting thinking in one single toolbox. We do not have to reinvent the wheel each time if we recognize a problem and then consider the suitable tools. To be creative, and disorder in our thoughts must be organized.

All the same, these tools should not be applied needlessly without concern for the type of problem and the time or means available. Using the tools described should not be fun for one, but rather part of a group thinking process. They are designed for group thinking sessions which, although necessary, may prove difficult for lack of a common language or working method. The advantage of the methods suggested here is that they have been tested many times both in France and abroad.

Reading a recipe and breaking a few eggs does not make a gourmet omelet. Although the methods mentioned enable groups to structure their thinking while stimulating the imagination, they do not guarantee the quality of the group’s ideas. Prospective

remains an art that requires several other talents to succeed, for example, conformism, intuition, and common sense. Perhaps playing scales does not make a concert pianist, but to remain one, daily scales are necessary. Methods other than those described here may be possible and even desirable. It is possible for researchers and practitioners to keep the flame of innovation bright while relying on the accumulated wealth of information in prospective as well as in strategic analysis. However, these innovations represent progress only in the sense that they enable us to ask more pertinent questions, to make our logic more consistent, and to appreciate the plausibility and importance of conjectures. Yet these new methods must be simple enough to be appropriated by others. Contrary to popular belief, complication is not the best weapon when confronting complexity. As old-fashioned teachers tell their pupils: “Good thinking is clear thinking.”

At the end of the day, new methods in analysis or thinking are not needed to understand the world as much as pedagogical progress in explaining is needed. For most major issues (unemployment, training, health care) the diagnostic and the prescription are known. What we lack are answers to the key question: how to act before it is too later? In other words, how can we replace emergency and reaction by foresight and proactiveness.

If anticipation really is to serve action, it must no longer be an art reserved for enlightened princes but rather a matter for the majority. Everyone of us should be concerned about the future, because that is where we will be spending the rest of our lives.

If there is no appropriation, there is only rejection. The best ideas are not the ones that we have, but rather the ones that we initiate in others. Motivating people and managerial talent make the difference between successful firms or regions and those that crumble. Indeed, problems are usually caused and solved by people. However, man is an animal motivated by desire and thus needs dreams and projects to live and, more mundanely, to score goals. In other words, moving from a forecasting session to strategic action necessarily involves debate plus enhanced collective and individual awareness of our responsibilities toward future generations. We owe our offspring at least the hope of a world where freedom may be enjoyed and initiative may be taken.

Human beings need challenges and projects to give some meaning to their lives. As we head towards the future in this manner, we find along the way the essence of life—the social links and mutual recognition that any shared adventure brings. As the German proverb says: “*der Weg ist das Ziel*,” or, the journey is the destination.

Organizations will increasingly need to shed light on their actions according to possible and desirable futures. They will be able to do so in an even more effective manner because people’s concerns will be a priority and, of course, individuals are necessarily behind all problems, solutions, and wealth. In short, strategic prospective has acquired a solid heritage and has rediscovered the importance of Socrates’ lesson, “know thyself.” We must use our skills and know our strengths and weaknesses before setting out to conquer the future. As the French philosopher Vauvenargue remarked: “knowing our strengths increases them; knowing our weaknesses reduces them.”

In terms of prospective, we know that this small “undiscipline” has matured methodologically while keeping the wide eyes of a child.

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