THE CRUCIAL PROBLEM OF THE STRATEGIC

PROBE : THE CONSTRUCTION OF THE 'PUZZLE'

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ABSTRACT

How can useful meaningful signals for action for senior managers be created from a jumble of widespread information ? The response to this question is dependent on their acceptance and support procedures for a strategic probe in their company. Some methodologies and simple tools can help the manager find his way through a chaos of information. Figure I gives a pictorial overview of our approach to this subject.

KEY WORDS

BACKGROUND

The aim of this article is to present an original methodology for processing qualitative information in companies.

In this article we consider the process by which a company keeps informed in an anticipatory way about the changes which have occurred in its socio-economic environment. We have named this process "veille stratégique" (strategic surveillance or watch)[1]. The reasoning for our research on this subject began with the following observations :

* on the one hand it seems natural, and conforms with the writings of other authors, that a company seeks to anticipate the changes in its environment by obtaining and interpreting information ;

* on the other hand, empirical studies and a number of practical observations show that companies are destitute of methodologies and tools for interpreting the anticipatory information that it receives.

We were concerned about the gap between the theory and the practice and aimed our research at making a contribution to reducing it. We wanted to construct a methodology which would help a company's management to interpret anticipatory information. We were thinking particularly about the managers of small companies, who need simple tools which require little time to use. These managers often complain that they receive a lot of information but do not which of it to use. Lists of information are of no practical interest to them.

The starting point for our research lay in the cognitive maps such as those presented by Diffenbach[2] or Narchal[3] for example. However, we had to advance in another

direction in view of the nature of the information which interested us. This is the information which is very fragmented and uncertain ; the "weak signals"[4]. Moreover, this information is ambiguous[5] and always incomplete : we put ourselves in a context of limited rationality[6]. We wanted to create a methodology and a tool which could facilitate the creation of meaningful signals for action in the minds of a company's management. We then turned towards publications which, on the one hand, were concerned with heuristics[7], and, on the other hand, with creativity[8,9], with the objective of using certain useful lessons for processing the weak signals and fragmentary information. This research led us to thinking about an analogy which proved to be fruitful : creating significance from fragmentary information is comparable to the jigsaw puzzle. In both cases, it is necessary to construct significant representations from scattered elements. This is why we have given the name PUZZLE to the methodology which we have proposed in this article. This methodology has now already been the subject of a doctoral thesis in Management Science and Information Systems[10]. The methodology and a prototype of the PUZZLE tool are currently being used by French companies. A new doctoral thesis is also under way, in collaboration with several French companies.

THE STRATEGIC PROBE IS ONE OF A COMPANY'S INFORMATION PROCESSES

The 'strategic probe' is similar to the 'space probe'. It searches for and transmits information about a company's environment. This flow of information into a company from outside, or from its environment, is one of three important flows of information in a company ; the other two are the circulation of information within a company, and the information flowing out of a company. Its purpose is to inform managers about the changes occurring in their company's environment. Its role is

comparable to that of a ship's radar[11], that is to provide a sufficiently early warning not only of the obstacles which loom up along a company's path towards survival and development but, above all, the opportunities which can be seized for the consolidation of its position and for its expansion.

Our experience with this type of information flow has shown us that many managers mistakenly think that it automatic or passive. It is neither. The information of the strategic probe does not arrive at a company by itself. That which does come this way is of little interest. Valuable information must be earned. One must go and look for it. In other words, the strategic probe designates a process which, more than any other process in a company, demands an enduring and steadfast determination on the part of management..

The French use the expression 'la veille stratégique' meaning 'strategic watch' or 'strategic surveillance' to describe this process. This is a poor choice as it does not properly reflect the need to actively search for and acquire the information about a company's environment. With good reason, English speakers do not use this expression. It would be better for the French follow their example and use 'intelligence of the environment'[12]. Personally, we use the expression, 'listening prospectively to the environment'.

There are various processes for gathering intelligence on the environment, called the strategic probe in this article. Some of these, such as that for technology, are well known but have become hackneyed and emptied of their true meaning. This is so to a lesser extent for others such as those pertaining to trade, competitors and politics. To an even lesser extent, there is the search for acquisitions.

The whole company would benefit from the development of its own 'radar' as it would reinforce the company's survival (H1). However, it is not necessary to

develop a complete range of strategic probes throughout the company. Attention must be focused on the most relevant areas of the environment[13].

THIS PROCESS RAISES PARTICULAR DIFFICULTIES

The strategic probe is a process which we in France have only started talking about in the last few years : it is new to our country. At present, only a very small number of French companies are paying serious attention to this process, whereas it is more developed abroad[14,15,16,17]. Our shortcoming in this area will be fatal for a good many French companies. In the next five to ten years, they will either simply disappear, or be taken over by foreigners (H2). However, the weak and slow development of the strategic probe can be explained.

This retardation of development has at its source :

* the very nature of the information involved[4] ;

* the very poor training given to current and future managers on the use of information towards strategic ends ;

* the rarity of information tools which are appropriate for exploiting this kind of information[18,19,20]. However, this field is evolving, a subject we will be returning to.

In the next section we will recapitulate the specific features of the information which is the subject of the strategic probe. We feel that this review is necessary for understanding the concept of Puzzle which we will be describing later in this article.

FEATURES OF THE INFORMATION WHICH FORMS THE FLOW OF THE STRATEGIC PROBE

The information is :

Anticipatory : it must inform management of the changes taking place which could present an opportunity (to be seized) or a threat (to be avoided). It must forewarn sufficiently early for reaction and not when it is too late to do anything[4]. The other features of the information in the strategic probe follow on from this fundamental one.

Qualitative : for the most part. Qualitative information does not consist of numbers which record or extrapolate the past. Here one is interested in events which may perhaps take place and not in accounting style reports. Therefore, the information may be picked up in any shape or form, such as snatches of conversation picked up or overheard at meetings, exhibitions, conferences etc.. This assumes that one is on the alert for it, that one is capable of catching it and then, afterwards, that it doesn't get lost somewhere inside one's company.

Indistinct : the information in question consists of clues, traces and signals which are all the more difficult to catch because they are swamped in the 'noise'. It must be teased out by questions and hypotheses in the minds of the managers. However, it does not consist of certainties. One is only certain about past events, and perhaps not even that. Moreover, this information may have been deliberately contaminated or distorted by a third party. All this leads us to the necessity of subjecting the information of the strategic probe to a particular treatment which we call cross-checking and also to the concept of Puzzle.

Fragmentary : The information of the strategic probe only appears as fragments which have been patiently collected, reassembled, interpreted and validated. Taken in isolation, each fragment is insignificant and suspect. However, once brought together with other information, it gradually acquires significance. This is why we use, by analogy, the word puzzle to describe the special file which will provide the structure for the reception and use of these pieces of information.

It is due to these features, that the information process which constitutes the strategic probe raises difficulties which a company will not have encountered (in any case not to the same degree) with other information flows; these latter being essentially the operational flows of information.

Let us briefly summarize the stages of an information process in order to situate the concept of Puzzle and what it achieves in practice[1,20]. (The reader who would like further details on this subject will find them in our book 'Système d'Information pour le Management Stratégique de l'Entreprise', published in 1990 by McGraw-Hill.)

The initial *search for information* : in the case of the strategic probe, the information does not arrive by itself; and this raises several problems which are predominantly ones of 'culture' and human behaviour. To have information of an anticipatory and strategic nature at one's disposal, one must really be determined to have it. Thus, the Japanese and, even more so, the Chinese (according to our observations) do not have the same cultural handicaps as we do on this point.

The *routing* of the information : most of the time, one does not know to whom and how to route the collected information which thus has every chance of being lost. This partially explains the paradox where a good many companies claim to have too much information but cannot possibly mobilize it at any given moment.

The *use* of the information which has been collected and not lost. How does one pass from the information to the decision ? How does one trigger action from the information ?

This last stage in the information process of the strategic probe is the most difficult one. Each stage raises tricky questions, as we have found in our work, but the last stage is the most crucial one. It is the linchpin. It raises the subject of *'intelligent storage'* of the information. This is precisely what lead us to the development of the concept of Puzzle and practical proposals for its use.

THE CRUCIAL PROBLEM OF THE STRATEGIC PROBE : THE CONCEPT OF "PUZZLE'

Let us recapitulate the elements of the problem before us. We have collected information which is essentially fragmentary, scattered and suspect, and by itself has no great significance. How can one move from a situation which is chaotic to one which is structured ? *How can meaningful signals be created out of the chaos ? It is a question here of the problem of creativity*[21,22] *?*

Our discussion on the Puzzle is analogical with the jigsaw puzzle. We have the pieces all jumbled up and we must somehow end up with one or representations which are significant for the company's management and which will generate decisions. Decisions upon which a company's survival may depend.

We present the following hypothesis (H4) :

If one is able to use the information of the strategic probe to produce meaningful signals, then the process for the strategic probe will be wanted, supported and used by a company's management.

In the inverse case, the strategic probe will be relegated to the operational ranks of costly, bureaucratic paperwork and will be of no practical use.

Example - Company X wanted to set up a technological probe. It had the benefit of several exceptionally favourable factors and still the endeavour failed. The favourable factors were as follows :

* the personnel given the responsibility for searching for the technological information were highly motivated ;

* the documentation for the retrieval of the information was well conceived and well accepted by the staff (it was not too complicated or too clever) ;

* general management was open-minded about a technological probe.

What then caused this endeavour to end in failure ? There were no procedures planned for processing the acquired information. At first, this was stored in files in a cupboard. No one knew exactly how to exploit it. At the end of several months, rumours were spreading throughout the company that the information was not being exploited. The personnel involved in the project were demotivated. The attempt at a strategic probe was cut short. We know from experience that the case of company X is very far from being an isolated one.

PUZZLE : A FILE UNLIKE ANY OTHER, NEITHER IN FORM, NOR IN CONTENT, NOR IN USE

Puzzle describes a file, but it is a rather special file whose features are as follows :

It *groups together* all the information collected by the searchers for the strategic probe. Thus, the cross-checking and validation of the stored information can be done progressively.

It accepts *all forms* of information : text ; images (and ultimately voice) ; without any particular prerequisite conditions for formatting it.

Puzzle allows *multiple arrangements* of the information. Here, the analogy would be with the kaleidoscope : with the same base elements forming a variety of images or diverse representations of a company's environment, until one is found which will most significant to a company's management and which will suggest to them the most questions and working hypotheses. These arrangements are achieved by means of different kinds of links : causal links[3,23] ; analogical links, links of contiguity, etc.

It provides verification of the *coherence* of the reassembled information.

It accommodates the fact that the puzzle to be built does not conform with any preconceived model. Such a model does not exist. Therefore, it is necessary to create several representations in order to find the one which mostly closely matches the perceived reality of the managers ; which is most sensitive to their understanding ; and which can most easily be integrated into their processes for

thinking strategically[24,25]. The construction of a puzzle is largely a judgement call or an individual or collective choice[26].

Finally, Puzzle provides a quick and easy access to the stored information. This is the function *capitalization and enhanced value'* of the environmental information at a company's disposal.

Figure 2 provides a symbolic illustration of Puzzle.

Figure 2

Essentially, the Puzzle file answers three practical necessities:

* *Provide significant representations* with regards to a company's environment (for example, its competitors, certain clients, or selected political decision-makers) without any preconceived ideas. These representations must be dynamic, that is, they must evolve as new information is received. The arrangement of the information, or say, the pieces of the puzzle, must be easy to modify[8,9]. This excludes traditional methods, such as a manual filing system. An appropriate computer tool is indispensable; and appropriate does not mean complicated.

In other words, the purpose of the Puzzle file is to enable the creation of links between fragmentary information, by going from atomized information, which says very little, to intelligible representations (one is then talking about the intelligence of a company's environment), without devitalizing the information. The reader will have understood that what we are discussing here has nothing to

do with the analytical summaries which are sent by various departments to the company's general management. We have noticed that in several companies these summaries are referred to as 'devitalized information'. Here, we want to keep all the vitality of the information.

* *Position the listening to and the scrutiny of the environment* of a company. The Puzzle file, easily manipulated on a micro-computer for example, enables the most appropriate means of answering the following questions which arise when new information arrives :

- should the information be accepted, or rejected as surplus to requirements ?

- does it complement the knowledge already accumulated? Does it shift us in a new direction ? If yes, what must now be considered ?

- does the information trigger off a warning, a click in the minds of the managers ? Does it trigger off a significant analogy ? Does it suggest any new action to the company ? Does it confirm information already recorded (cross-checking and validation to guard against disinformation and deliberate contamination) ? Or is it contradictory? If it contradicts existing information, should we suspect that the latter is disinformation or has been deliberately contaminated ? What complementary information must be obtained to validate or invalidate the hypothesis of contamination ? In other words, the Puzzle file allows one to be more selective and more targeted when listening to one's environment. Thus, the strategic probe is more effective and dynamic.

* *Infer inaccessible information* by direct means. It is possible to draw inferences from information stored in the Puzzle file. Thus, one can use three pieces of stored and appropriately grouped information in the Puzzle file to infer a fourth

which could not possibly be accessed directly. Of course, it may be a probability but not necessarily a certainty. Therefore, it should be taken as a working hypothesis which one tries to validate when possible.

EXAMPLE : A PUZZLE FILE FOR THE COMPETITOR PROBE

Company XY wished to set up a probe of its competitors. They have gone through the standard stages for setting up such a function. Strategic information about their targeted competitors has started to flow in.

The Puzzle file on their competitors has been gradually built up. One could say that this held an information base for each competitor. Each piece of information (text, image, diagrams, etc.) was stored by a scanner linked to a micro-computer. The information was digitalised so that it could be processed by the appropriate software and indexed to enable the creation of links on demand.

At any given time, it was possible to obtain the state of everything that was known about a competitor. A global vision of the competitor, from a strategic perspective, could also be obtained, but it was not a rigid or fixed one.

A manager's questions about a competitor triggered information in the framework of the current principal idea. A representation of the knowledge about the competitor would appear on the screen which could have one of two implications.

Either it had a pertinent significance which clarified or supported a manager's thoughts and therefore, the representation was kept and perhaps printed.

Or else the representation did not set off any triggers in the manager's mind. In this case, the representation could quickly be replaced by another, using as its base, information from another principal idea or working hypothesis. The new representation had the same two possible implications.

This operation could be carried out as many times as is necessary. The appropriate computer tools or software were easy to use and could create representations very quickly.

A surprising fact arose from our work. The information of a strategic nature stored in the Puzzle file was not as voluminous as the managers of Company XY had expected. While setting up this competitor probe, they gradually learned to be selective about the information which was kept on their computer base. Information which could provide an eventual contribution was kept in the traditional way, in the cupboard. This meant that the random access memory of the Puzzle file was not cluttered up.

An additional discovery was the *educational nature* of the Puzzle. Its progressive construction and frequent use had the effect of familiarizing members of the company with the strategic probe. For them, what was originally an abstraction became a reality. This easy to use tool facilitated a change in their feelings towards the strategic probe. Something which was abstract and daunting became something more solid and even enjoyable to use.

On the whole, the company actually increased tenfold the *environmental intelligence* on its competitors.

Other companies have asked for the installation of such a Puzzle. When we work with them, we will be paying very special attention to the identification of the

success factors as well as the factors for possible failure. A fundamental question still remains to be answered : why have certain attempts to set up a strategic probe, mentioned earlier, ended up in failure?

STEPS TOWARDS BEING OPERATIONAL

The Puzzle musn't be a complicated workhorse of the strategic probe, it must be the turbine, the driving force behind it.

It is management and not computer personnel or other specialists who will continually maintain and exploit the Puzzle file. Even then this will only occupy a manager for part of his time.

The Puzzle file is kept on a micro-computer where there will be a variety of accessories which will evolve as learning progresses :

* a scanner for recording text and images ;

* software for digitalising the recorded information into a convertible format ;

* software for the graphic processes which would allow the visualisation of the links established in the strategic probe ;

* appropriate software for document management ;

* and a computer screen with a large enough screen for handling the visualizations and for making them as presentable as possible for general management.

Let us note incidentally that the cost of all this equipment is continually decreasing. In the main, it often already exists in companies but is not used for the strategic probe.

The Puzzle file does not really raise questions of cost but its does raise questions about the management culture, which is surprising.

Our team has already developed a simple micro-computer tool for Puzzle using Microsoft's relational database application, ACCESS. An input screen accepts information in the form of keyed text and poses questions concerning its reliability and subject matter etc.. Responses to these questions provide the structure for the storage of the information and access paths for its subsequent retrieval. This screen can also be used as an update facility. Another screen guides the creation of representations of key ideas concerning for example possible opportunities or threats for a company. An example of such a representation is given in Figure 3 which also shows how notes and indications for action can be added to the information which has been retrieved.

This tool was well received in the companies where it was tested. The tests also showed us that only half a day is required to learn how to use it. This and the low cost of the support material (micro-computer and ACCESS) suggest that it is a particularly appropriate tool for the small companies.

Figure 3

WORKING HYPOTHESES AND THE WAYS OF PROGRESSING CONTRIBUTIONS TOWARDS THE SUCCESS OF THE STRATEGIC PROBE IN COMPANIES

We will conclude this article by reformulating the principle hypotheses which underlie it.

H1 : The company which is effective in the long term is the one which is listening prospectively to pertinent developments in its environment (that is, an ear which is well targeted).

H2 : The absence of the function of listening prospectively to the environment is frequently a contributory factor to the death rate of French companies.

H3 : To be effective and motivating, the strategic probe must raise significant questions in the minds of general management.

H4 : The passage from jumbled, widespread information to significant representations is the really crucial problem of the strategic probe. If this passage is not well planned, the strategic probe is reduced to a bureaucratic practicality which is of no real interest to management.

H5 : The concept of Puzzle and the tool which gives it material shape form a decisive step towards an effective and real, prospective Listening to the environment. In particular, they help evolve attitudes which welcome a greater anticipatory listening to the environment.

We hope that these working hypotheses, the results of our work and experience, will be useful for the reader wishing to move into action.

Our team is working on the validation of these hypotheses and furthermore the generation of conceptual tools and software which could facilitate the development of behaviour in respect of the strategic probe and which could answer questions raised in this article.

This work was done in collaboration with companies which wished to more productive in regards of the strategic probe.
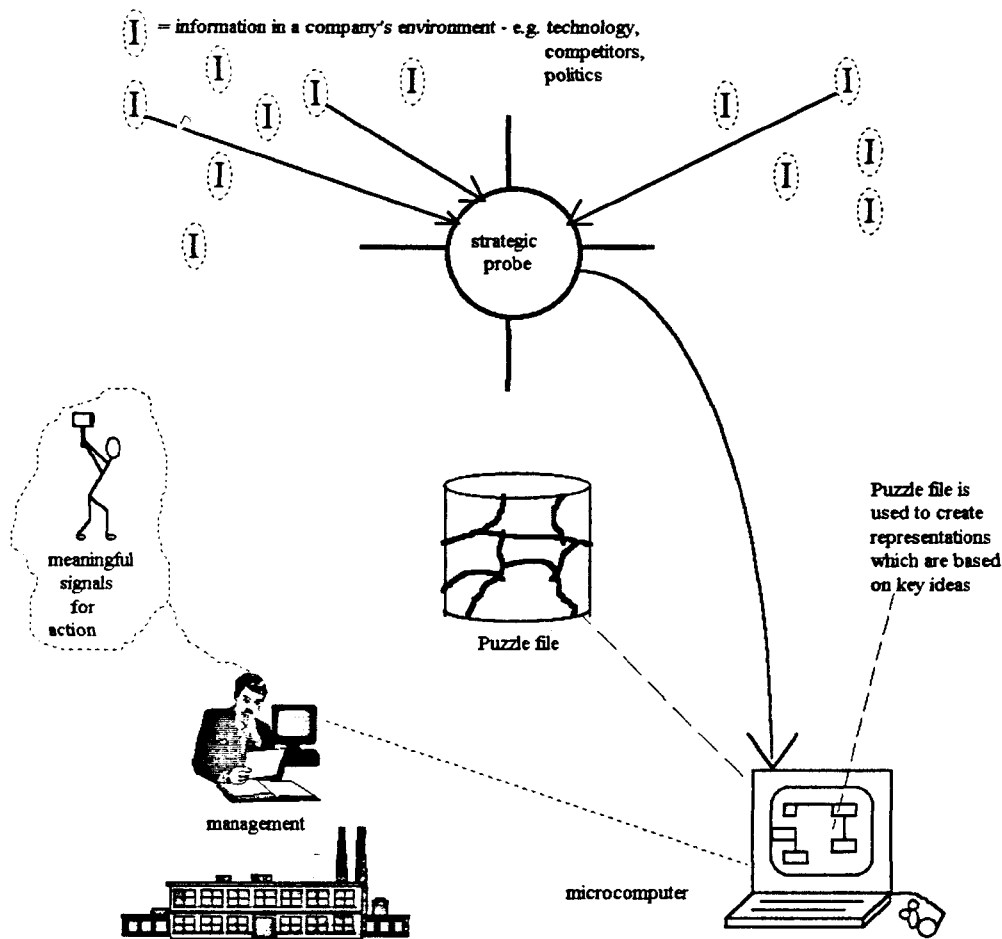
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Figure 1: Pictorial overview of the strategic probe and the Puzzle file

Figure 2 : a symbolic illustration of the 'Puzzle file' ; the linchpin of the strategic probe

Information *impossible to obtain* obtain *directly but which can be* reconstituted by inference from closely related information.

Gap to be filled. We are obviously missing some information. In this case, the Puzzle file is an aid for directing the search for complementary information.

We have here information which already exists in the Puzzle. But we can profit from this redundancy by using it for cross-checking and verifying the validity of the existing information in order to protect us against disinformation.

Information which forces the extension of the field of vision. Contrary to the jigsaw puzzle, the Puzzle file does not have any defined boundaries.

Little by little the fragmented pieces of information, which have no real significance by themselves, assemble themselves into larger and larger pieces... the strategy of a competitor... for example. The Puzzle file gives concrete expression to the links likely to be established between the pieces of information.

Figure 3 : a possible representation of a key idea concerning a company's competition created with the use of the micro-computer tool developed for the PUZZLE methodology

PUZZLE : tool for processing the
information of the strategic probe

▭	Puzzle demonstration	▽
▫		

Unreliable information · Trail to explore

Indeterminate reliability · Urgent action

BELOUTIL's business strategy in the U.S.A.

BELOUTIL Japan wants get into the Japanese market through an intermediary, EASYTOOL

BELOUTIL: admitted objective : world No. 1 in all markets

confirmation

BELOUTIL: European No. 1 in all markets

BELOUTIL wants to get into the Japaneses market

Should we take these objectives seriously?

List the European companies which could possibly be bought in 93. Identify the next victim. What can be done to counter BELOUTIL's strategy?

BELOUTIL is a threat in the European market

BELOUTIL bought EASYTOOLS in Jan. 92

BELOUTIL bought LARCHER in 91

Confirm and follow the development of these discussions

Creation of BELOUTIL POLAND now being discussed