

From noticing to making sense: The use of intelligence in strategizing

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We are witnessing today a fundamental shift from the collapse of traditional industries to the rise of economies based on intelligence resources and adaptive problem-solving capabilities. Industries are shifting from satisfied introversion to an inescapable extroversion, and discover, with disappointment, that their own perception and sense-making remains for them a mystery. Temptation for rationalization and eagerness to reduce uncertainty by any means provoked a rush to import techniques and methods that showed efficiency in the diplomatic world into their every-day business life.

Corporate intelligence units and centralized departments started to pop up in the business world in the mid-80s, with so many failures that executives wonder today if governments themselves have not over-exaggerated the efficiency of their own intelligence efforts. There was —sadly— no reason to anticipate a success in implementing techniques that were created under social and technico-economic conditions that do not exist any more.

What corporations imported are hard, formalized and centralized processes, involving planned searches, scrupulously sticking with a cycle of gathering, analyzing, estimating and disseminating supposed enriched information. From this cycle, companies' analysts drew a structure with departments, personnel, and costly budgets. Meanwhile, companies' profitability was demonstrated to correlate very weakly with the formality of planning (Grinyer, Norburn, 1975). Organizations were demonstrated to be rather informal and unsystematic in their interpretation of the environment (Fahey, King, 1977) and most companies compete against skilled competitors who pretty much "strategize" having access to the same information (Starbuck, 1992). There was obviously no reason to expect that putting the corporate eyes in one single formal department —call it business intelligence unit— would work.

Purposefully iconoclastic, this paper describes intelligence as a psychological built-in process, not a structure, not a department, not a team of champions supposed to be the eyes and ears of a whole social system. Intelligence, a continuous human activity, gives sense to the stimuli received from the environment. These stimuli can be passively received or actively sought. The searching entity can be an individual by himself, an individual within an organization, or an organization within a group of other organizations.

One can therefore distinguish three entities in the intelligence process: the individual, the organization, and the environment. This paper attempts to make two contributions to the literature. The first is a road map for understanding and tracking intelligence within a social system. This road map synthesizes previous works both on intelligence (Wilensky, 1967 ; Dedijer, 1989, ...) and on perception (Weick, 1969 ; Starbuck, Hedberg, Nystrom, 1976, ...) and extends the work in areas such as intelligence development and intelligence-strategy integration. The result is a more complete map of the intelligence path within an organization.

The second contribution is to position intelligence theory within its practical framework. For example, the paper explores through the results of three case studies conducted between 1991 and 1993, the validity of such constructs as intelligence cycle, centralized intelligence, and intelligence management in a corporate environment.

Background

Organizations lack time to understand their environment. Information flows on board from everywhere, sinking the corporate ship under tons of urgent needs, latest special reports, flashing 24 hours-a-day on-line news and so-on. Limited time, limited rationality, restricted understanding, limited eagerness to give an eye to others' backyards and self-restriction on a so-called need-to-know-basis is *real life* corporate intelligence. Organizations are vast, fragmented, multi-dimensional kingdoms with their "ceremonial conformity" (Meyer, Rowan, 1977). Corporate history, past failures and victories, along with founders' biographies, contribute to built-in organizational myths, that inevitably involve normative obligations. Thus, organizations have memories, not only with their archives department, with their old-times newspapers, dusty boxes of internal mail, but real history, carried from mouth to ear, as warnings for new comers, advice from the experienced "old boys", building up tacit rules for inter-personal communication and intelligence process.

But before anything could happen that can be called intelligence, information about the "external world" must be first noticed. Environmental stimuli are captured, filtered, treated through a kind of nervous system holding back or producing organization's choices. Companies can be seen as interpretation systems whose scanning, interpreting and learning are interrelated to each other in close and dualistic relationship (Daft and Weick , 1984). Environmental scanning is at the core of the relationship between a company and its environment, and thus is a central key to understanding corporations (Pfefer and Salancik , 1978).

A company is not a lost island in an ocean of information ready to be gathered and incubated within an explicit interpretation cycle. Companies interact with their environment within an historical and longitudinal framework. Every available conspicuous means contributes to the establishment of industry-wide conventional recipes (Spender , 1989) whose major objective is to avoid uncertainty. Through trade association, journals, word of mouth, consultants, companies *negotiate* their environment (Cyert, March , 1963).

Dealing with urgency and limited rationality

Within this framework, individuals act on incomplete and variously reliable information. Caught by approaching dead-lines, surrounded by urgency, individuals seek the simplest means to reduce complexity according to the criteria on which they will be *locally* judged. In a panel of criteria to base a decision on, those which are assumed to be important for the direct hierarchy will be privileged. A local coherence is sought, often regardless of a global or rational coherence of the whole corporation (Berry , 1983). This particular characteristic of management is known as local or limited rationality. An individual can hardly deal with unlimited goals and plural rationalities. What matters is the limited set of problems, and the limited set of goals that are attached to them, that he or she can call "my job". Within the corporate boundaries, local rationalities generate their own borders, and people recognize each other as belonging to clans: "people from engineering", "bean-counters", "old-boys", "the marketing people", ... when not designated by others. To protect these fragile borders, waste and fuzzy procedures are displayed as flags of the forbidden territory. Individuals try to keep a fuzzy or foggy zone around their task definition, their behavior and their language. This "blur zone" creates a personal organizational slack: some spared space to organize a last-minute manoeuvre, a blurred job definition that can hide personal strategy, a spared individual freedom within the social system (Crozier, Friedberg , 1977). Strategies of waste are used to avoid personal consumption disclosure to others, which is itself like signing intents. It might concern a useless stock of three erasers and five pencils, as well as the increasing by a mysterious 5 per cent of an annual budget. In military divisions, no one is surprised to see columns of trucks taking away soldiers on manoeuvre just before the end of the financial year. The additional cost that will be produced by this late military exercise will represent the mysterious 5 per cent that will guarantee the organizational slack of the next financial year.

Thus, cognition delimits a territory of noticed stimuli as compared with unnoticed stimuli. Intrusion in other cognitive territories unveils conscious strategies, by bringing clarity where fuzzy signals and strategies of waste were standing as a shield against others' intrusion . Meanwhile, intrusion is the only means of extension of actual cognitive territory, as shown below :



But waste strategies and blurred definitions are hardly compatible with intelligence imperatives. Intelligence is not socially acceptable in a business community because its "reason-why" has been generated within a different historical context. Intelligence is charged with a "truth-seeking" background, and affected by a public image of "truth-manipulating". Corporations are not seeking "truth" about their markets or their customers. They are seeking a relative understanding according to the limited rationality of maintaining their competitive advantages, pursuing customer seduction, or being financially sane. Sometimes, maintaining blurred frontiers of their organizations is the only means available to CEOs to get their company evolved in the way they want (Cabridain, Pouvourville , 1981).

Economics of sight and signs

Nature always chooses the easiest way. One will always investigate the closest neighborhood rather than intimate environments farther from the problem place. Economics of time, sight and signs play a major role in interacting in general, and in search and understanding in particular.

Thus, micro-economic theorists classically explain agents' behaviors according to their preferences for goods and a search for a balance in goods and services exchange. But search itself is absent from the most economic theories as a subject. Search involves costs whose avoidance eventually plays a significant role in goods preference formulation. Economic theorists might have forgotten an *economy of vigilance*. Economy of intelligence efforts may be at the core of economic decision making (Oury, 1983). In the "mechanism" of making sense for strategizing, communication modes play a central role in capturing and circulating intelligence. The maintaining of fuzzy borders from one's rationality to another, involves communication that enables the reliability of the sense given to be circulated at the lowest psychological costs for both parties. Communicating or gathering intelligence is opening a field of intimacy between two cognitive territories. Thus, making sense is often seen as an individual process in the literature, while it might be highly communal.

Investigating the inevitable failure of scientific models, Ronald Jones compares the scientific task of assembling and interpreting the evidence of Nature to any other intelligence task. And to do so, he uses the analogy of practical joking to underline the mechanisms of both creation and detection of incongruities (Jones, 1975). His work is developed from a finding of Sigmund Freud: "The pleasure in jokes has seemed to us to arise from an economy of expenditure upon inhibition". In the theory of practical joking, we won't be interested in the jokes themselves, but in this mechanism that gives enough sense to a short sentence to cause laughs (to reach an understanding and an intimacy). This mechanism "appears to be the creation of an incongruity in the normal order of events".

Incongruities are these particular and unusual sets of events that retain the perceiver's attention and might be, along with association, one of the core explanations for noticing. Intelligence production aims at reducing complexity in a limited amount of signs, transmitting the sense-given, without its "raw materials" (beliefs, models, facts, stimuli, potentials, blur, etc). While humor arises from an economy of language by suggestion, a psychological economy upon inhibition (the creation of incongruity against the normal order of things, without having to define oneself as abnormal), intelligence is processed from both psychological economy of uncertainty avoidance, and imperatives of translating sense-giving into strategy in a limited time-frame.

"Sense" implies the normal order of things, seen from an idiosyncratic cognitive territory. In other words, each individual attributes sense to an event according to his own mental models, experience, cognition, or models and cognitive habits imported from a broader community in which he works, lives and learns. We give and attribute sense differently. "Common sense" refers to a mythic wisdom that would gather the largest consensus among a given population. In the vast and changing territory that separates one's own sense of events to somebody else's, bridges have to be built sometimes between individuals' understanding in order to achieve different tasks; formulating a strategy being one of these. These "bridges" involves high psychological costs, depending upon the other parties' intrusiveness in one's own cognitive territory. They disclose competencies, intentions, abilities, and other elements of personalities that sometimes would like to be kept blurred than transparent. Economics of signs play a major role in protecting the borders of cognitive territories. Words will be used as regulators of the sense-giving, on the basis that one's understanding is shared at different levels with different persons.

We now guess intelligence to be a complex social process, dependent upon human limited rationality, caught in the economics of sight and signs. We will now investigate, within the above framework, how corporations search, notice or fail to notice, make sense and re-assemble their perceptions into intelligence. In a first development, we will investigate the theoretical framework of noticing and making sense, trying to bind it to intelligence reality. In a second development, we will compare the previous assumptions with intelligence and strategizing in real life, and draw some conclusions.

Why and how do corporations search ?

Search is always stimulated by a problem and depressed by the problem solution, proceeding on the basis of "a simple model of causality until driven to a more complex one". It is unavoidably biased because of its links to the receiver's variations in experience, training, and goals (Cyert, March, 1963). Problem symptoms, origins and solutions or current alternatives will be systematically sought in the neighborhood of the problem discovery. This principle of proximity joins the principle of logical incrementalism in corporate evolution (Quinn, 1980). Innovations will be sought, step by step, "near" existing technologies. Former solutions would eventually be improved to match the current needs. Personal networking might as well follow the path of "neighboring". A theatre play, entitled "Six Degrees of Separation" (John Guare, 1992) develops personal histories under the assumption that where ever you go on this earth, there will never be more than six persons

between you and any person you will potentially meet. Behind the amusing situations that an intuitive writer can develop, there might be some organizational insights well hidden in this assertion.

Following such an exercise, we can be really surprised by the veracity of such an assertion. Reviewing all the past contacts and meetings, even with the support of a personal networking database, unavoidably reveals that none of our knowledge is separated from us by more than six persons (the usual case being one person introducing another one). If we now focus our interest on human intelligence, that is to say intelligence gathered from or produced by human sources, should we apply the same principle and study consequences in understanding and explaining intelligence process ?

The first assumption that we can make from the *Six Degrees of Separation* paradox is that search is a highly personal process. Search efficiency is likely to be more linked to personal experience, motivation and awareness than to any organizational structure. This assumption correlates with the previous findings that regular, planned search is relatively unimportant in inducing changes in existing solutions that are viewed as adequate (Cyert, March , 1963).

The second assumption that might be induced is that any process aiming at intelligence production should not be farther than six inter-relationships from any involved individual. Centralized units lose sense when lacking personal intimacy of understanding. Physical, psychological and cultural distance decreases collective understanding between individuals involved in intelligence production. We will thus assume that intelligence and intimacy are highly related, and are playing a core role in organizational consistency.

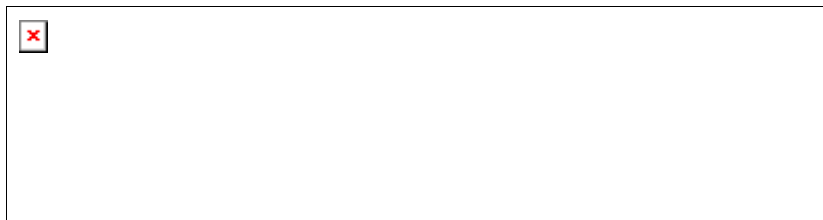


Fig. 2. Intelligence production

Corporations search within different communities, which can be compared to different plausible neighborhoods in finding a solution to a problem. Search takes place in a community of practice. A community of practice is a set of influences and relations between persons involved in "an activity system about which (they) share understanding of what they are doing and what that means in their lives and for their communities" (Lave and Wenger , 1991). This definition, however, might be confusing as it returns on the concept of community to define another community. The cathedral builders and masons, whose sharing of word of mouth transferred knowledge, developed as a philosophy in 19th Century Europe, might illustrate accurately the concept. Cathedrals building was a complex task. It involved management of an environment that over-came dimensions of usual architectural projects of these times within a time framework of several centuries. This over-dimensioned framework is handled by an apprenticeship of learning spatial conceptualization, tool making, task scheduling and rock cutting. This learning is developed within a collective mentality of contributing, representing, and subordinating, and closely tied to action. The reliability of the system depends on the strong ties that link interrelated actions within a collective mind (Weick, Roberts , 1992). We will develop the idea that intelligence-strategy integration is highly dependent upon the enhancement of an intimacy developed within a collective mentality.

This assumption correlates with previous findings of cultural comparison between intelligence practice and understanding in Japan and in the United States. The Japanese word for information, *joho*, describes a purpose and a method. *Joho* was first combined in the 1860s to translate the German military term "nachricht". It is based on two Chinese ideograms : *jo*, which can mean the feeling of man's mind or the state of affairs, and *ho*, which can mean to feed back or to inform (Nagayama, 1983 ; Qihao, 1992) . For Japanese, information connotes purpose, when information in Western corporations is seen as a commodity (Kotler , 1991). Other findings show that Japanese corporations behave within a collective culture of information. Making decision is part of a process that seeks collective agreement at each of its level, before reaching next decision level. Western individualistic values and mental models about competition increase the gap between intelligence-strategy integration between Western and Japanese corporations (Harbulot , 1992). We thus assume that search is guided by cultural models, defined as "a cognitive schema that is intersubjectively shared by a social group". "A consequence of the intersubjectivity of cultural models is that much of the information relevant to a cultural model need not be made explicit, because what is obvious need not to be stated" (D'Andrade , 1990).

The consciousness that discovery may be guided by cultural models is rare among corporations. Culture is difficult to assess because it involves assumptions that may concern the national frameworks in which these

cultures inter-act, raising controversial issues. From the research perspective, a culture is hard to put into data, and results validity is often countered by the existence of industrial sectors that develop themselves beyond both national and cultural boundaries. Industry-level analysis is thus widely preferred, but still there has been very little cognitive research on competition and cooperation in general, and on search and intelligence from the cognitive perspective in particular.

Analyzing the Scottish knitwear industry, Porac, Thomas and Baden-Fuller show that core-beliefs about how to deal with other parties in a transactional network shape the perceived competitive arena for managers. Their findings illuminate the industry as being organised into "cognitive oligopolies", that is to say dominant cognitive foundations held by oligopolists, because they have defined each other as such (Porac, Thomas, Baden-Fuller, 1989). As the results demonstrate, within fuzzy competitive boundaries, "managers must mix market signals with existing mental models to make choices about who to watch and who to ignore". Search is thus guided by a core group of mental models discriminating competitors from non-competitors, and switching alertness "off or on" regardless of the intensity of the stimuli received.

These models are made from knowledge, behaviors, mental maps, norms and values that organizations keep over time as their own and unique cognitive system and memory (Hedberg, 1981). There is a consciousness of such corporate values and memory. Some corporations will erect as a policy not to hire young candidates having spent their first experience in another company. They want to have a mind free of external influences to be modeled according to the company's culture and needs. Other companies have hired historians to write their History, pursuing the longitudinality of their identity.

The eagerness for search might as well be a part of the organizational cognitive system and memory. Corporations intrude in their environments at different degrees; some actively search the environment and allocate resources to their intrusions; others will passively wait for the environment to provide an answer (Daft, Weick, 1984). One cannot separate, however, the organizational intrusiveness from the characteristics of the environment itself, and how they are perceived by managers. When the environment is changing, difficult to penetrate, and subjective (Duncan, 1972), managers will tend to modify their perception, considering the environment less predictable, or less "analyzable" (Perrow, 1967). While search is motivated by a problem, beliefs about the analyzability of the external environment may slow the search or modify it. To the two criteria of intrusiveness and analyzability advanced by Daft and Weick, we will add the dimension of *intimacy*, trying to demonstrate that search is an *engaged process*.

We will thus redefine intrusiveness according to a degree of intimacy with the environment, rather than a physical or channelled presence in different places and information sources. Daft and Weick propose to measure organizational intrusiveness by the resources allocated to research activities. We will work under the assumption that resources allocated to research, and the degree of intelligence outputs matching or anticipating the environment evolution, are poorly correlated. Measuring organizational intrusiveness through corporate subscriptions to monitoring services (Thomas, 1980), or on the fact that the company send agents to the field (Wilensky, 1967), is highly misleading. We will assume and try to demonstrate that the *quality* of the intimacy of the company with its environment is the key of its intelligence accuracy. Organizational devices that enhance this intimacy will be more appropriate to develop corporate intelligence, compared with distant and formal centralized structures.

How and why do corporations notice?

Noticing might be, or *might not be*, the result of search. Under this simple statement, this ground truth makes every positivist approach, including the so called "business intelligence systems", dangerously misleading. Intensive, planned, centralized research will never guarantee any organization of a 100% rate on noticing environmental changes or anticipating them. There are events that can be noticed by only one person within the organization. Because this event is particular to him, because he will associate its stimulus with a long-time ago event, in which he has been involved, because his learning, his education and his experience let him alone to notice the "incongruity in the normal order of events" (Jones, 1975).

As a matter of fact, noticing remains a mysterious phenomenon for most corporations. Who, when and how some events have been noticed rarely matters for corporate decision makers. In a context of urgency, and under a system of evaluation that favors the output rather than the process, no time can be reasonably allowed to the roots of cognition in decision-making. It might be unfortunate.

What we notice, and what we fail to notice, draw the borders of our true and only cognitive territory. We never act, strategize or decide outside the limits of the *noticed* world. For noticing is opposed to simple sight, is feeding the process by which we give sense and find orientation in our environment. The first step of any intelligence process is thus not to scan, but to notice.

Noticing bears the idea of *instant*, while perceiving is more inscribed in a length of time. The first can be compared to the precise instant when a photography is taken. The photographer has "seen" something, that he could quite describe in a few words. Although he is certain that he will be surprised when the film will be developed. Perception is this process that involves the instant and its maturation. By bringing light and playing with contrasts, and sometimes masks, the photographer's own interpretation is incrementally brought to the picture. In this process, sequential major steps are involved : filtering, framing, increasing or diminishing stimuli effects (the light).

While the photographer is only tricked by the distortions of his camera movements, and then can play as he desires with light and masks to build his creation, the corporate perceiver will be caught in a real rainbow of distortions; including distortions in noticing the stimuli, in sensemaking, in applying the wrong frameworks, in forming biased expectations, in attributing the wrong causes to an event... Not only could the wrong eye movements have been done, but what is caught can also be transformed while it is being viewed. Once again it is reviewing an ultimate step of rationalization.

Where we are used to look, and what we are used to seeing, we are likely to see again. What we notice influences where we instinctively look next time we are confronted with a similar problem. Our mind is learning some virtual path, to look for the missing information. With experience, this virtual path become a "self-defined exploratory access to unfamiliar territory" (Davenport, Cronin, 1990). In noticing, we are all virtual apprentices. What we notice, and fail to notice, shape our thoughts and mind (Goleman, 1985). Thus, noticing continuously re-define the corporate intelligence window. In the airline industry, corporate alertness is often directed to fares. "If one carrier introduces a new low fare, others might signal their displeasure by matching the new low fare for only 1 or 2 days —a sign that they would like to see the fare brought to a quick end. If that doesn't work, they might cut selected fares on some of the instigator's most profitable routes" (Nomani, 1989).

Whether noticing is strongly linked to a goal is not certain. Goals are often ambiguous, attention problematic, memory incomplete, causality confusing (March, Shapira) in organizational acting. When search does relate to a problem, the assumption that noticing is also related to a goal is appropriately suspect.

The idea that noticing and preventing decision makers from information overload should be conducted by individuals who operate at the edges or periphery of an organization (Aldrich, 1979) is suspect as well. Boundary spanners (Leifer, Delbecq, 1978), if dedicated to the role of noticing for others, will be held in an ever-ending sense quest. For sense making and noticing are highly inter-related. The failure of many centralized intelligence units corroborates this indissociability of noticing and sense-making. Intentions and significance of competitors' actions cannot be summarized and communicated to decision makers by boundary spanners as the literature suggest (Huber, Daft, 1987). On the contrary, boundary spanners may communicate environmental stimuli as they are, eventually accompanied by a note of their expertise. Thus, we will work under the assumption that intentions and significance of competitors' actions are at the core of sense-making, and thus conditioning the quality of strategic response. We assume that top managers avoid to rely on the sense-making of boundary spanners —except when they become temporarily one of them— in order to strategize.

The intimacy that tied noticing and sense-making in intelligence production correlates poorly with previous findings concerning the competitive advantage of having slack resources allocated to information search (Bourgeois, 1981). Additional slack resources might speed up decision process and improve response decision, but not for their complementary role in noticing and sense-making. They may contribute to decision process by validating or evaluating the compatibility of other managers' sense-giving with current strategies, assessing the credibility of the current perceptions. As we previously assumed, the core role that intimacy plays in producing intelligence will suggest that any resources exclusively allocated to search, without an intimate role in intelligence-strategy integration would not operate efficiently their search. As a matter of fact, this assumption presumes that market research divisions will be more efficient when intimate with the translation of intelligence into strategy, that is to say being an integrative part of the intelligence process.

On the other hand, structural complexity and multiplication of levels between the external world and decision makers may increase the chances of stimuli distortion or blockage (Brenner, Sigband, 1973). Failing to notice may thus be attributed to structural characteristics of the company. Managers cannot be held responsible for failing to notice stimuli that cannot reach them. Loose coupling between formal organizational charts and patterns of authority and inter-relationships can help in regulating and avoiding heavy hierarchical devices in perception. Organizational slack allows corporations to be more adaptive (Cyert, March, 1963) and therefore may play an indirect role in improving noticing.

How and why do corporations filter their perceptions ?

When the General Patton observed Field Marshall Rommel's panzers through his binoculars as they were doing exactly what he expected, he laughed triumphantly and exclaimed "*Rommel, I read your book*". Managers do perceive their role as to "read the book" of the competition, "to seek it out chapter by chapter, to write it down, to learn it thoroughly" (Downham, 1992). Corporations fear to become unpredictable to each other. When Japan Air Lines had his first important losses in twenty years in 1992, an Executive from All Nippon Airways worried about the event, explaining that this loss was not the centre of the preoccupation by itself, but made the environment less predictable. The two companies evolved together, adjusting to each other, on the basis of cross predictions. When Ambrose Bierce cynically described intentions as "the mind's sense of the prevalence of one set of influences over another set" (Bierce, 1911), he didn't figure out that he did describe a phenomenon lately described as mental modelling by psychologists. Twenty years of competing and cooperating together had modeled the perception of the interaction of JAL and ANA. The unexpected event directly affected the mental models in which companies were developing their perception of their competitive environment.

Perceptual filtering may be conscious or unconscious. Some managers obscure problems and deliberately distort information to protect their positions (Lyles, Mitroff, 1980). As receivers of stimuli, they may as well disregard other communicators as being biased or as having something to gain personally (Hovland, Weiss, 1951). The reputation of an individual or company thus declines if signals go unfulfilled (Milgrom, Roberts, 1982). The ability to communicate a high level of perceived commitment to intended actions can match receivers' perceptual filtering. "If no commitment is perceived then the signal will be discounted due to the uncertainty surrounding whether it will be fulfilled" (Heil, Robertson, 1991). But commitment is itself a mature form of perceptual filtering, and sometimes leads to self-deception. A fair amount of objectivity may be disregarded if it threatens the commitment that is needed to sustain the engagement in action or decision process. This is true at every level of decision, including search, noticing or sense-making. This corroborates Kiesler (1971) findings that the stronger a person's commitment to a belief, the less likely he was to modify this belief. We propose to introduce two forms of commitment, respectively founded on a sense-given, and founded on sense-learned. We will define a "sense-given" as the result of a personal engagement in the process of search, noticing and sense-making. On the contrary, a "sense-learned" is the result of filtering itself. When an individual is not personally involved in the process of searching and noticing, he or she will make sense on assumptions, beliefs, values and norms that surround his or her understanding. The extreme degree of the latter would be a "blind commitment", that is a commitment based on interpretation within the on-going socialization process, and isolated from the external world. "Blind commitments" are more likely to be found in religious organizations, tied to spiritual understanding, rather than in corporations, when total avoidance of the external world is hardly realizable. We will try to test the assumption that a commitment founded on a "sense-given" rather than on a "sense-learned" is more likely to enhance intimacy in order to achieve intelligence-strategy integration.

Filtering can be deliberate in the purpose of increasing accuracy and audience. Describing the role of information in times of crisis, Robert Taylor comments the 58 hours that followed Hungary's formal plea for help to the United Nations in 1956. He notes that human filtering is needed "to distinguish and to flag critical messages so that they will not be buried, (...) to find ways of filtering system input to reduce overload without denying access" (Taylor, 1991). In periods of crisis, or during bursts of change, executives lose contact with the traditional "flags" of their cognitive territory. Rules might be broken by unexpected outsiders. Norms and values may lose their importance in regard of survival imperatives. And executives cannot foresee events on the basis of their previous experience, leading themselves to "perceptual errors that may cause the greatest damage" (Starbuck, Milliken, 1988). Managers would eventually anticipate the perceptual filtering that will be applied to their communications, and change their messages accordingly. If their assumptions about their colleagues' perceptual filtering is inaccurate, the whole organization ends on working on deliberately biased assumptions, because of everyone's good intentions. Prange, Goldstein and Dillon (1982) —retracing unheeded estimates in the Midway battle— demonstrate how such a filtering implement itself in an intelligence process. As synthesized by Barabba (1989), "the U.S. Chief of Combat Intelligence, Commander Joseph Rochefort knew within three to four hundred miles where most Japanese ships were located. Each day, he reported what he knew to Captain Edwin T. Layton who handled intelligence for Admiral Nimitz. But Layton, whose early warnings of the attack on Pearl Harbor went unheeded, consistently inflated Rochefort's estimates. He knew fullwell that the folks in operations viewed the intelligence types as natural-born alarmists. So, if Rochefort estimated that four Japanese carriers were on the prowl, Layton would increase the number to six. He bet on the fact the Naval Operations would presume that he had over-estimated everything by at least a third. Then, because they so strongly believed that assumption, they would discount by an equal amount his inflated estimates, and through this roundabout route come back to the original Rochefort estimate". Deliberate filtering in order to get attention is the most common, and maybe the less studied phenomenon in the literature. Reports from sales forces would display attractive figures, when marketing-promotion budgets are in negotiation. Engineers and "corporate scientists" would debate other the numerous and exclusive applications that would be derived from their findings (although without assessing these applications in terms of customer retention or market shares, this task being disregarded as one of the "marketing people")... Managers try to adapt their outputs to the "thinking standards" of the group in which

they interact (Janis, 1982). Anticipations of a group reaction can distort images of reality, even if intelligence estimates that lie behind them may be accurate (Janis, Mann, 1977).

Social systems in general, and companies in particulars, perceive each other as rivals because they define themselves as such (Porac, Thomas, Baden-Fuller, 1989). Studying the publications of a Taiwanese public marketing intelligence centre, Qihao (1991) notes that "South Korea and, to a less extent, Singapore and Hong Kong are perceived as competitors. Publications concerning the developments in the information technology in these economies often bear such titles or subtitles as: "EDI wave in other three Asian *Small Dragons* and its shock on us" ". Mental modelling often get control over foresight. The Wright brothers, presenting their invention to the British Admiralty in 1908 received the following answer: "With reference to your communication concerning the use of aeroplanes, I have consulted my technical advisers and regret to inform you that the Admiralty are of the opinion that they cannot be of any value for naval purposes".

Perceptual filtering, noticing and sense-making are almost simultaneous, that is in a time frame of having an idea, arguing with its contrary and capitulate under both external and internal influences. While perceptual filtering distort what we notice, and then interactively distort as well our sense-making, both noticing and sense-giving become inputs to each other (Goleman, 1985). Researchers on self-deception, along with intelligence practitioners, are quite used to the subtleties of minds poisoning themselves. Thus, consciousness of perceptual filtering do not systematically lead to self-reformation (Fingarette, 1969). Managers tend to review and rationalize past filtering process as deliberate. For example, executives would easily attribute results to themselves in communications, regardless of potential rewards, and thus diminishing resources commitment (Schwenck, 1990).

How do corporations give sense and produce intelligence ?

Corporations often differentiate facts from intelligence by qualifying intelligence as to be "future-oriented". Value of intelligence is thus evaluated on whether or not it matches anticipated facts when they occur. Thus, "anticipating is an indicator of what was imported from the social system and how well it was imported" (Weick, Roberts, 1992). Qihao suggests that formalization and intensive use of information technologies poorly correlates intelligence purpose and efficiency. As he notes, "in the case of the Taiwanese marketing intelligence centre, a computer database was still in scenario after several years of founding (Qihao, 1991). This corroborates other industry cases, such as Kodak who developed an intelligence gathering and information analysis process mainly based on *oral communications*, though on a world-wide scale (Mockler, 1992). In previous findings, formal reporting systems were thus identified as to "foster misperceptions by emphasizing financial and numerical data, by highlighting successes and rationalizing failures, and by crediting good results to superiors" (Starbuck, 1992). It is not really surprising that managers carefully avoid to write down their intelligence or to put it through a formal reporting system. The more formal and distant is the communication between two persons, the less corrective signals are allowed to enrich the message. People prefer work face-to-face to reach higher understanding, rather than interact by telephone, personal memos or formal communiques that decline steadily information richness (Daft, Lengel, 1984).

When corporations finally decide to review their intelligence process, as Corning did in the early 1990s, they are surprised to discover that perception about the external world remains a mystery. They have "to stay back and evaluate how information is actually exchanged inside the company" (Fuld, 1992). Intensive research has been led to design methods that would prevent organizations to be so mysterious to themselves in terms of information and strategic decision. Findings suggest that positive redundancy in studying intelligence issues with different intellectual orientations; institutionalised devil's advocates, organizational short-cuts and mixed methodologies should enhance intelligence awareness (Dror, 1987). We propose the assumption that most intelligence failures are not due to the application of inadequate methods, but can be attributed to the separation of intelligence formulation from the patterns of action. This corroborates previous findings of "an intimate connection between the patterning of action in organizations and the interpretations given to organizational events by organizational members" (Sandelands, Stablein, 1987).

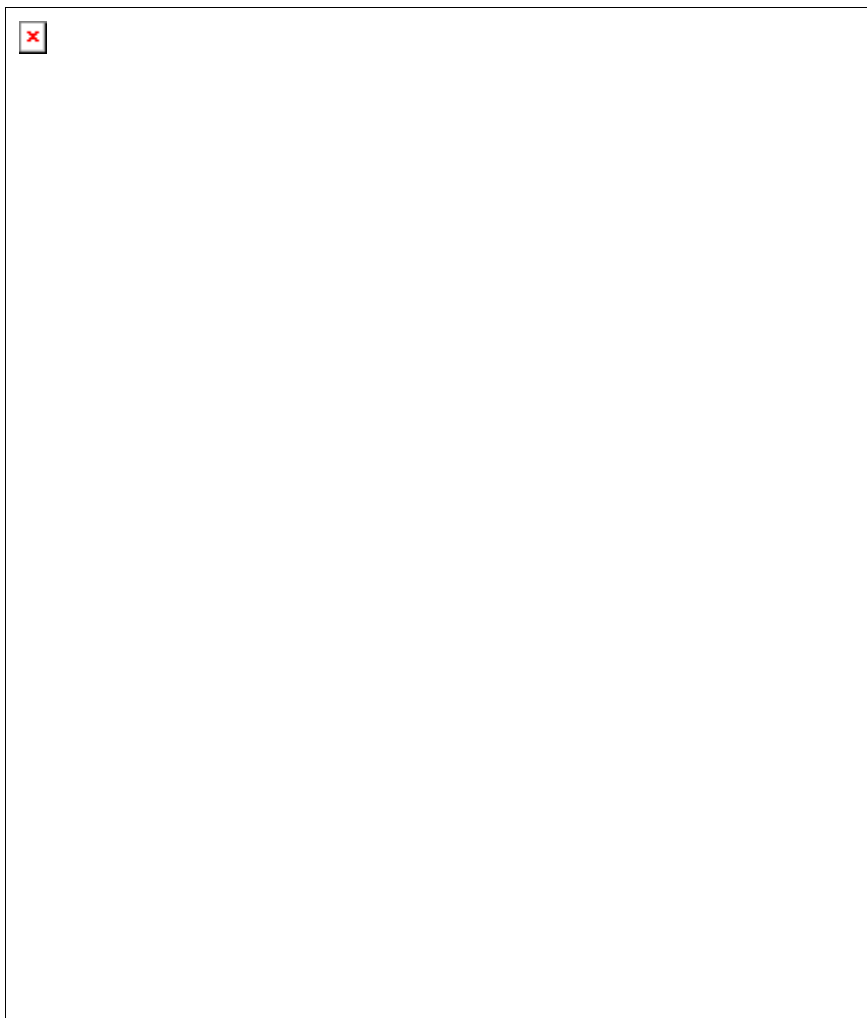
The desire for visibility leads corporations to put space in squares and divisions, time in measured cadences. Corporations with past industrial History often have conceptions of intelligence inherited from earliest social and production control in factories (Baumard, 1991). In such corporations, intelligence conception would eventually aim at generating a "house of certainty" (Foucault, 1975) by requiring a measure of everything — time, business and men— to get control over uncertainty. Miliken & Company for example, regularly sends "agents on the field" to international textile machinery shows to intrude the environment on a continuous basis and gather intelligence (Miller, 1990). Senior management's perception of how to deal with competition can either foster the demand for intelligence or freeze the shiest initiative in the area. As Dedijer put it, demand for intelligence can be generated by a way of thinking that puts emphasis on "foresight", rationalization and suspicion (Dedijer, 1983).

But organizations sometimes reach a point where politics are hardly distinguishable from strategy. Sense-making may be influenced by the fear of identifying a problem that results from a past error by an upper level executive (Lyles, Mitroff , 1980). Incongruity towards the social norms and values act as a catalysis for sense-making. Thus, external signals or stimuli will be viewed as aggressive if their ratio of receiver-cost to sender-benefit is very much at odds with industry practice (Heil, Robertson , 1991).

As above descriptions suggest, intelligence is rarely the tangible product of systematic planned search in corporations. The following graph synthesizes the factors that may influence search, noticing, filtering and sensemaking and is proposed as a road map for tracking intelligence in organizations.

The second part of this article presents intelligence and strategizing in real life. Three case studies show how intelligence can be tracked on a cognitive map of what "people notice, how they make sense, exchange their insights and strategize".

A road map for tracking intelligence in organizations



A Case Study Research

A case study is an empirical enquiry that investigates a contemporary phenomenon within its real-life context; when "the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used" (Yin , 1984). Case study is a research strategy that tries to illuminate decisions *from within*. Organizations are not seen as consistent objects on a virtual and hardly tangible "market place", but seen as they are, from an arm-length distance.

Intelligence is quite a sensible subject for corporations; and not exactly the one that is subject to flashy files with black-on-white letters entitled : "Intelligence archives 1980-1990". One of the difficulties of handling corporate intelligence as a research subject is this systematic lack of archives, added to a wide spread misunderstanding of the concept and a definite fear to disclose corporate secrets.

As no statistical data exist on intelligence activities in the business environment, a quantitative approach are hardly applicable. Intelligence, on a second hand, is dealing with how individuals, whether being part of a group or not, are searching, noticing, perceiving, making sense and producing an understanding of their environment in order to intelligently "strategize". Case study thus is an adequate method to extract "grounded truths" about intelligence and to build a theory whose intimate connection with empirical reality would permit the development of relevant and valid constructs (Glaser and Strauss , 1967).

Selecting cases within a relevant population is crucial, because an appropriate population helps to define both the limits of generalizing, and to control extraneous variation (Eisenhardt , 1989). The criteria for selection was to get interested in companies in a globalization context, rather international, and in the process either to review or modify their strategy formulation process under external pressures (merger-fusion, market deregulation, major new entrants threatening sustainable market shares, ...). These companies should be sensitive to intelligence, if not practicing intensively, at least understanding its tenets and roots.

Four different industrial sectors were chosen as a start (airline industry, mining and heavy industry, banking industry, electrical industry). Deregulation and / or globalization are concerning, in different forms and ways, the four industries. Cases were chosen as singular situations and polar types so that the process of interest would be "transparently observable" (Pettigrew , 1988). In each sector, a comparison between two companies, interacting in this industry, is drawn.

The purpose of the investigation is not to study any pre-supposed "intelligence process", because this would be assuming that intelligence does develop through a process, and then does represent a manageable attribute of any organization. The research strategy was thus to track the organizational perception, from the environmental stimulus, its noticing and handling by personnel, sense-giving and "journey" through the organization until it is admitted and perceived as a strategic input. Intelligence professionals might jump from their seats and just say that is an "intelligence process", but as far as it is not understood so by the company, it is preferable not to give early interpretations of any phenomenon.

Method

Multiple sources of evidence are used to illuminate the process being observed. Multiple-case study like this one are usually considered as "comparative" (George , 1979). It thus requires extensive resources and time. Cross-comparisons and incessant iterations from experiment to theory building are necessary for research consistency.

Int-depth interviews, observations and documents are used to obtain a triangulation of observation protocols (Jick, 1979). Previous findings show that questioning methods have different results in obtaining answers to sensitive questions (Armacost, Hosseini, Morris, Rehbein , 1990). Questions concerning the intimacy of personal perception of the environment involves attitudes of protection comparable to sensitive information disclosure. Through pre-tests conducted during previous research , various devices were adopted to ensure respondent anonymity and to reduce the apparent threat posed by sensitive questions. Some researchers used the technique of hiding a sensitive question among a set of innocuous questions (Locander, Sudman, Bradburn , 1976). It has been eventually considered that such a method might be self-deceptive for the investigator as the interviewee might discover the hidden aspect of the sensitive questions, attributing wrong intentions to the research and modifying his or her answers accordingly. A guaranteed anonymity has also been considered as a potential bias in the research results. The use of questionnaires, or methods like randomized response (Warner , 1965) that produce aggregate estimates under probability principles, free the respondents to any fear to be identified. Fantasy, self-attribution and phantasmagoria often takes place of truth in such cases. In a pre-test led in 1991, a respondent was not shy to anonymously disclose that he based a business deception on reliable sources coming from "pillow-talk", in which he was portraying himself as a central actor . Further investigations had soon uncovered both the deception and the romance to be pure fantasies.

Other techniques, themselves based on deception of the interviewees, were also carefully avoided, for being considered as "insane" and dangerous for longitudinal continuity of the research. It might be unfortunate to come back to a respondent, and finding a closed face, quite unhappy to have previously spoken out because of derived means. These techniques are, for example, the use of two unrelated questions, one of which being completely false (innocuous) and the other quite accurate, or different variations which objectives are to put confusion and diminish awareness to question sensitivity in respondent' s head (Greenberg, Abul-Ela, Simmons and Horvitz , 1969). Though, randomized response approach has been proved in several occasions to provide better estimates than direct questioning (Tracy and Fox , 1981).

Interview should finally be based on honesty between investigator and respondent, as to avoid any perception of threat (erasing the threat, rather than diminishing its awareness). Such a rule as not pronouncing the word

"intelligence" before it is purposefully and specifically pronounced by the respondent appeared to be effective. Regulation and adaptation to the respondent's awareness, during the interview, also showed greater results than direct-questioning or rigid interviews guides that were being used during pre-tests.

A simulation technique of putting the respondent in situation is being used to put the participant in a projection scheme. Entry in the subject of intelligence is not attempted before some important stimuli — revealing the respondent's understanding and cooperative attitude — can be noticed. A technique taken from randomized questioning is to provoke chit-chat centred on respondent's centre of interest, whatever that could be. It starts with a discussion, mostly casual and with innocuous concerns for the research. Time can be lost intently on this chit-chat as far as stimuli of psychological "comfort" are received at a certain level. This device is processed straight after the purpose of the research had been shortly exposed, and the own definition of respondent's role within the organization has been asked.

Carefully listening, and picking up signals of the process hidden behind common and every-day life perceptions, is basically the attitude of the investigator during the whole interview, with patterns of authority in the evolution of dialogue that are dependent of the interviewee's personality. Outcomes from in-depth interviews were compared to on-site observation of managers' behavior and perception flows on different internal and external supports (such exchanges of memos, phone calls, letters, etc). Documents contents and managers' perceptions were cross-compared when access to documents was allowed by company officials.

Previous findings on questionable intelligence gathering techniques (Armacost, Hosseini, Morris, Rehbein , 1990) were focusing on illegal business practices such as employee payoff, use buyers, fake job interviews, impostor, fake bids, acquire and searching competitor's trash, insider information or using false credit, using *questionnaires* as research method. The questions were regarding the CEO's perceptions of his own and other companies' activities. The survey was responded by an overall of 392 CEOs. Such a technique was carefully avoided for two major reasons. It is once more focusing on the techniques rather than on the understanding of the process. It is using different projection techniques, focusing on CEO's perceptions concerning other companies ("The Hell is Others", as Sartre wrote). Answers might be doubtful concerning the supposed CEO's own company, as the questionnaire is anonymous with no guarantee that the questionnaire has been filled by the CEO himself. Moreover, to believe that a CEO would honestly answer the questions and then return the questionnaire on such a sensitive issue challenges credulity.

Preliminary Results

The present results concern three companies, respectively named a, b, c in the following presentation of results. a (Alpha) is an airline company operating in Asia-Pacific, and on both European and American continents. The company is mature enough to be part of the "traditional" airlines core group. It has a significant corporate history that created the company's own specific culture, norms, values and ceremonies. The research took place in the late 1992 and early 1993.

b (Beta) is an European mining and metallurgy company operating world-wide. For research consistency, it has been selected on the same criteria as the airline company. The company is large, with significant corporate history, including the pioneering of the industry in the beginning. Without being the leader of its sector, the company is a skilled competitor and markets internationally. The research took place in 1991.

c (Chi) is an European electricity engineering and supply company. Although it has long benefited from a quasi-monopolistic position, it has to face gobalization and partial deregulation of its markets like a and b. It is also a skilled competitor in its industry, with international operations, and was a pioneer of the industry in its beginnings. The research took place in early and mid-1992s.

The objective is here to provide some insights —from empirical observations of the case studies— on how these companies handle, produce and use intelligence. We do not wish to generalize what should be understood more as preliminary findings rather than statements.

In the Arizona desert, 900 aircrafts await a slow rust deterioration in a plane graveyard. The world-wide airline industry experiences an over-capacity dilemma, as the economic recession continues. In 1991, the industry lost US \$12 billions. Companies are seeking short-term returns to make their assets replacement and assets growth. If companies' policies are to maintain actual market standards, some experts strongly believe that some carriers won't be able to survive by themselves in such an environment. Most of them predict an increase in numbers of fusions-acquisitions and in the concentration of the whole sector.

Ten years ago, airlines were diversifying intensively. In the last five years, there has been a contraction and

airlines had to concentrate on their core business of transportation. The globalization of markets has been accompanied by a sophistication of the routes used by passengers, and a shift in business travel habits. As a result, airline companies have to cooperate to offer these routes. Thus, there has been an enormous increase in capacities, not always in conjunction with passengers growth. In the same time, in ten years, prices have been diminished by 30 per cent or more in real terms.

Profitability fell down, due to effects driven by unit costs. The flights are priced to at least cover fixed costs. Besides, mega-carriers pursue cash-flow and market shares, generally leaving insufficient returns for future business needs and asset replacement. Economic recession has fostered a high cross-elasticity regarding price within the growth market (leisure economy class). The business traffic has also become a declining segment, because many companies try to cut general travel expenses. The global recession played a major role here. The impact of new technologies of communication (eg. networking and cable conferences) have also had an impact on the decline of business travel segment.

Even though Asia is the most promising airline market in the world, Asia is very tight with restrictions, and each company lobbies vigorously to protect their routes and to keep their yields high. Asia's booming economic attracts a growing number of carriers, and business intelligence also offers a means to protect the market against external aggressions. Companies based in South-East Asia share the competitive advantage of being ideally located to compete locally / and globally (being a stop-over on the European route, or the Japanese route) and to prevent other players coming to their market place. Moreover, by playing a role in different airports, in so many different routes, there is a multiplication of intelligence sources (airports monitors, aviation authorities statistics in each country) that gives a competitive advantage for all the carriers that are not at the end of a route.

The search for intelligence is motivated by six current problems in the airline industry :

- 1) Coping with increased globalization of markets and carriers in the airline industry, that is to say achieving global intelligence.
- 2) Foreseeing and preparing the implications of long term of the current financial losses of the airline industry (5-6 years).
- 3) Keeping the yield up to reduce financial loss.
- 4) Stimulate market "movement". With several sequential crisis (Persian Gulf, economic recession, etc) in the last years, the market has to be "re-stimulated" or "re-juvenated". The low fares has done little to stimulate the market.
- 5) Following or anticipating changes in regulatory regimes.
- 6) Keeping up with new technologies and adopting them when they create a competitive advantage.

Learning from past intelligence failures

In the mid-80s one airline tried to implement a "competitive intelligence system". The two persons in charge of the project had gained their experience in the airline industry from working in the strategic planning formulation in the company. One of them had actually spent a part of her career in negotiating rights for opening routes and was sensitive to intelligence issues. The other was sensitive to the broader strategic issues of globalization and long-term planning.

In-depth interviews with persons involved in the implementing process demonstrate a high understanding of intelligence issues with consistent background knowledge. Nevertheless, the project failed. Reasons for failure were attributed both to management attitude toward the system, and misunderstanding of the issues. The system was a computerized news-clipping service, along with short intelligence briefings, integrated in the Executive Information System (EIS). At that time, the EIS was put through the internal network of the company and accessible through keyboards. It was soon discovered that executives were not comfortable with using computers. The rate of utilization was extremely low. The competitive intelligence system was limited to short briefings on global economic (airline industry, global economy), market, technical and political environments. The system was designed solely for senior management. The number of personnel in charge of news-clipping was insufficient, as recalled by the implementers. Other sources say that "they didn't really know what to cut", confirming assumptions that noticing and making sense cannot be hermetically separated.

As soon as other managers learned that somebody was specifically in charge of corporate intelligence, they started to disengage themselves from intensive search activities because: "That was the responsibility of someone else". Specialization of intelligence created a lack of involvement from managers. As soon as intelligence was identified as a function, managers tended to identify it as a "foreign" cognitive territory, outside their local preoccupations. Implementing an intelligence function that exclusively serves the Senior Management encouraged isolation.

The executive information system was soon changed into touch-sensitive screens, with simplified menus. But it was put on a separate machine, provoking a social sign of distinction between those who have and those who have not the "executive" information system. Perceptual filtering about the system was incrementally becoming predominant in managers' perception. Not to appear as privileged by colleagues, the system was simply rarely used, or used and then disregarded in informal conversations with colleagues.

Within a year, the competitive intelligence system was abandoned and intelligence management returned to a more informal and unsystematic (project-based) channels. Roots of this failure can be found in the airline industry specifics. Operating an airline is firstly motivated by the maintenance of a culture of reliability (Weick, 1986). Airline industry culture is thus one of operations. Companies are proud of their history and publish brochures on the foundations of the company and the pioneering years. Stickers, pins and posters of early years carriers are current purchases of personnel that put them in their offices or their homes. The industry developed itself in a monopolistic, regulated, domestic environment. Marketing activities were seen as a fairly recent introduction in the industry. People from operations control, in-flight personnel and pilots tended to see marketers as "sleazy car salesmen", while marketing people saw operations as an "old boys" club. Partial deregulation and increased competition forced companies to be more financially oriented. The weight of finance in the airlines strategies increased progressively during the past two decades. Both marketing and operations people see finance managers as "bean counters". These three cognitive oligopolies (Baden-Fuller, Porac, Thomas, 1989) share the cognition of the environment. Senior Management is itself divided into top managers coming from the three different cognitive territories. Intelligence outputs and their circulation tend to "travel" within these cultural and cognitive boundaries. Communication between people from marketing, operations and finance is difficult to achieve. Information richness is higher within the boundaries of the cognitive territories where face-to-face work is more frequent. Communications between operations and marketing, for example, tend to follow more formal procedures.

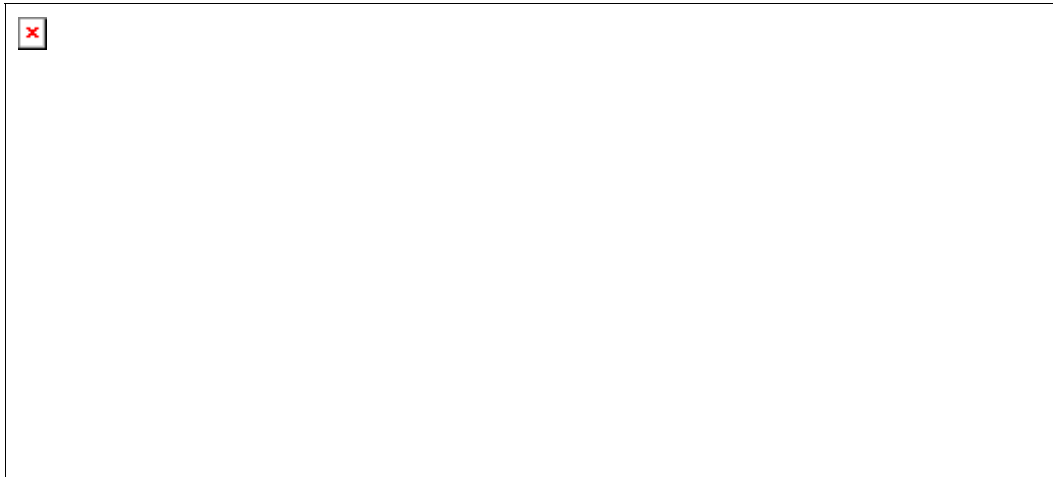
The senior management is conscious that the evolution of the market (mixed regulation and deregulation, globalization and regionalization) calls for more precise, market-oriented schedule planning. The fact that a flight may be scheduled for a 9:00 AM, rather than a 6:30 AM departure, appears to be a marketing argument for segmenting the market. Scheduling softwares bear names such as "intelligent rescheduler systems" (IRS). Airline scheduling involves the treatment of a huge amount of data, with a zero-default imperative for passengers security. Problem-solving capability is at the center of intelligent rescheduling software. As ICL put it: "IRS searches for ways to solve a problem, or set of problems, using the same process employed by operations staff, namely the immediate elimination of improbable solutions with the objective of avoiding or minimizing passenger disruption" (ICL, 1992). Public opinion is rarely aware that airlines, until recent years, were scheduling their flights manually, within tight time constraints, on large boards where different color lines represented flights to be planned.

Airlines follow each other in price fixing. When an airline introduce a lower fare, other airlines follow until a "reasonable" price is tacitly agreed, without collusion, by all airlines. In-flight service and catering tends to an industry standard as crews and food catering are often shared today between airlines. Most aircraft offer similar cabin characteristics. When an airline introduces a differentiation such as personal video-screens and libraries, other airlines will follow within a similar time frame. Profitability comes from intelligence in route portfolio management, financial expertise, and corporate image enhancement. Economic recession has diminished interest in first class segment, and companies tend to reduce this service. Both long-term financial management and human resource allocation (operations management) play a major role in increasing margins to assure the airline survival.

However, operations management tend itself to reach an industry standard as airlines participate in benchmarking activities in industry associations. Access to benchmarking results are allowed accordingly to the participation of the airlines in the group. Therefore, differentiation must be found in improved methodologies. Softwares such as IRS are part of these differentiations that can give competitive advantage and substantial savings to airlines.

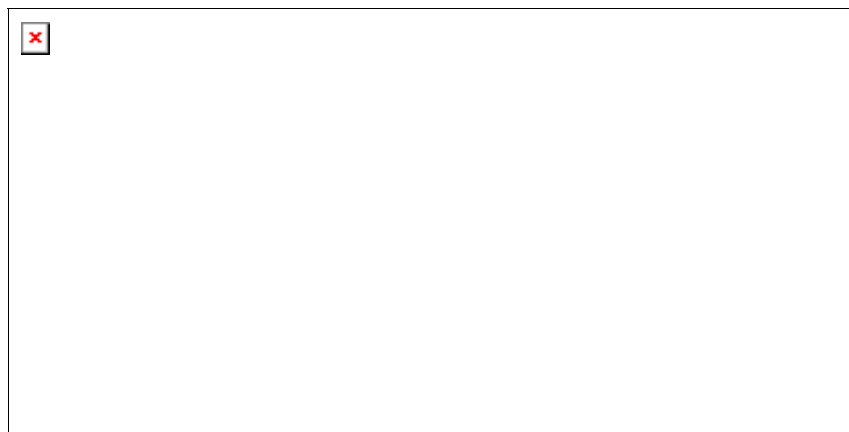
In the studied airline, consciousness of the issue fostered the interest for market-scheduling integration. We will demonstrate that this initiative get the company closer to an intelligence-strategy integration by sharing the noticing and sense-making of the three above cognitive groups : operations, marketing and financial strategy. The airline imported a scorecard methodology that "tracks the key elements of company's strategy,

from continuous improvement and partnerships of teamwork and global scale" (Kaplan, Norton , 1992). In an airline activity, schedule planning process is currently a dialectic between, on one side, requestors, and on the other side, contributors (see graph below).



In a context of permanent urgency (limited time frames), priorities are often given to schedule securing, passengers security and operations imperatives (minimizing passenger disruption). The operations cognitive group is then playing on his own territory. Voices of marketers hardly get expected feed-back. Scheduling is less market-oriented as it could be to give a competitive advantage to the company. Every request and contributions must be recorded and then end as formal communications, even if started as informal phone calls. Information is not shared, but exchanged, rationalizing the three cognitive groups and their territories.

The airline decided to put together a team of information systems engineers, "bean counters", "old boys", "sleazy car salesmen" and strategic planners to define a prototype of a scheduling process that would put strategy — not control — at the center. Doing so, they decided to put together the noticing and the sense-making of all different cognitive groups involved in this process. The principle of the prototype is to use advance information technologies such as information sharing softwares to provide a framework where all participants can exchange their estimates freely and in real-time to achieve a strategy-oriented scheduling process. Requestors and contributors join together in an "electronic forum" respecting the industry procedures and allowing para-communication. In other words, hard and soft data are exchanged in this shared formulation process, along with windows where personal estimates can be added to figures. This system opposed itself to "traditional measurement systems that have sprung from the finance function (...) that is traditional performance measurement systems that specify the particular actions they want employees to take and then measure to see whether the employees have in fact taken those actions. In that way, the systems try to control behavior. Such management systems fit with the engineering mentality of the Industrial Age" (Kaplan, Norton , 1992). Thus, windows that have been added concern "political analysis, traffic rights and political implications, compatibility with strategy, alliance implications, passenger market analysis, freight market analysis and opportunities". Unconsciously, and maybe because the persons in charge of the strategy-based scheduling process were precisely those who failed in implementing an intelligence system four years ago, the new system does not only share information, but also intelligence.



Intelligence sharing: where do insights come from?

The problem with information in organizations is that people "gather information and don't use it. Ask for more and ignore it. Make decisions first and look for the relevant information afterwards" (March, Shapira). In that sense, the airline industry is fairly open. Managers often come from the same flying schools (pilots) or have been trained in specialised centres that are shared between several companies. In the Asian-Pacific country where this research has been conducted, the Marketing Managers of six among the ten major competitors' subsidiaries come from the same school and know each other. It is not unusual for one of them to call their colleague to have his or her feelings about a current industry trend. Some insights may come from a competitor that disclose his or her intelligence by just telling his former colleague his or her feeling about a current preoccupation.

We will distinguish two kinds of intelligence: one coming from the "external world" as above, and the other produced inside the company by the compilation of different findings from managers. In the external world, the travel agents who are constantly looking for the best prices to offer to their clients are often good sources for signals about some new competitors' offers. As it is usually said in the industry, "the information that is on the desk of the travel agent, will be on the desk of the airline company before the end of the day". The travel consultants, who are acting as "brokers" on the transportation market, are very well placed to obtain a large number of signals and have a global view of day-to-day trends on the market. Some carriers try to gain important shares in these travel consulting companies in order to secure their intelligence sources. Their competitors consider the practice anti-competitive.

Intelligence sources are quite classical in the airline industry. They can be advertisements, mergers & fusions consultants, suppliers and the people in charge of lobbying the Government to protect the routes from foreign competitors. Financial intelligence is harder to get as financial reports are mostly out of date when published. Operations intelligence comes from industry associations and benchmarking practice, and publications such as the ABC World Airways guides, giving the shared airline designator codes, the airline code numbers, the routes, and complete addresses of all companies in the world. ABC collect, maintain and distribute airline schedules, fares and other travel data. The ABC guide also contains flight routings, airport terminals description, minimum connecting times and aircraft seating plans. Once again ABC is more an "intelligence reference" rather than a real-time source because of the publishing delays. Operations intelligence is thus compiled from numerous sources, including shared maintenance with other carriers, observations in airports, data collected from duty control. Competitors' schedule performance reports are quite easy to get. They are distributed to managers, and spare copies can eventually be gathered from insiders. Cooperations between airlines, fusions, and strategic alliances sometimes include exchange of schedule performances reports. These reports contain departure and arrival punctuality statistics, significant delays, delay reason summaries, airport dispatch, baggage delays statistics and other data that measure the operations performance. Vital strategic implications can hardly be deducted from this data; only assumptions that some airlines are more performing than others in carrying passengers to their final destination with minimized problems.

"Analyzability" of the airlines environment is usually perceived as high, even if tasks are complex. The environment is perceived as analyzable mostly because a great number of statistics are freely available. Governments are publishing every month statistics about the air lines loadings, departures, arrivals, per country and even sometimes per airport. These documents contain a short industry analysis, a scheduled international air traffic to and from the country of origin, scheduled international passengers by operator, scheduled operator market shares, airline passenger capacity and utilisation to and from the country. When such data are not available, insiders in foreign airports can easily get them. Other useful statistics can also be obtained from the Department of Immigration or the Customs about ethnic migrations, immigrations, movements of people per nationality.

Another element that makes managers perceive their environment as "analyzable" is the extensive use of computerized reservation systems (CRSs). Reservation systems provide a precise information on flights availability and allows companies to draw estimates by comparing national statistics concerning total passengers movements (customs) of all companies to their own data. Offensive intelligence on these networks becomes more and more current. Recent intelligence operations involved British Airways and Virgin Atlantic and were widely reported by the press.

Thus, intrusiveness is a persistent component of the airline industry. However, it is difficult to describe it as "intrusiveness" is usually understood (Daft and Weick, 1984). Information sharing is an unescapable fact in this industry. Sharing skies and airports involves operations information sharing. Using the same aircraft and aiming at safety improvement involves technological information sharing. In fact, airline companies do not intrude their competitors' environment, they rely on it. When interviewed, strategic planners say that their job is much more compilation of available information accordingly to current and future strategy, rather than finding out intelligence. However, they would currently admit that competitors' intents and strategies are their main focus, because more rarely published. They find insights on these topics in professional publications, noticing that it is part of their own organizational learning to know what publications are relevant. Industry

publications are abundant, with supports such as Aviation Daily, World Airlines News, Jane's Airport, Airline Business, Interavia, Flight International, Aviation Space & Technology, Month Travel, Travel Trade Monthly, and many others. These publications, however, cover global strategies and are not sufficient by themselves to formulate accurate strategies.

Strategic planning of the airline a compiles its intelligence findings in a monthly report, to the attention of the senior management. These reports, however, deal with broad issues and seek more a consensus in understanding rather than offering a basis for "strategizing". Intelligence insights that matter are directly put through by oral communication during the numerous meetings held in the company ("punctuality review group", board meetings, "branch and department review teams", task forces meetings). Cross-division review groups meet monthly, weekly or daily depending upon management process changes involved. The business plan precises aim at "awareness of trends, corrective actions, major management issues and general information exchange". Presentations from task forces are received, along with reviews of board reports.

Observation confirms that most intelligence circulate through informal and oral communications, nevertheless formal intelligence channels do exist. They provide "hard" information such as, for example, the conditions of the arrival airport. Information is received before boarding with the briefing instructions. The following is a telex sent from Los Angeles for the attention of all aircraft, with immediate effect :

ACT) ALL B)WIE C)06182359

(...) E) SITREP 3 TO BE READ IN CONJUNCTION WITH SITREP 2

(AUTH MANAGER SECURITY SUPPORT)

JURY IN CIVIL RIGHTS TRIAL IN L.A. DELIVERED VERDICT. NO REPORT OF CIVIL UNREST.

THE COMPANIES INITIAL RESPONSE TO THE POSSIBILITY OF CIVIL UNREST WILL REMAIN IN PLACE UNTIL MON 19APR LAX TIME WHEN SITU WILL BE REVIEWED. WOULD OPTG CAPT PLS PASS THIS INTAM TO THE FSD AND ENSURE ALL CREW MEMBERS ARE BRIEFED.

A systematic analysis of briefing telex shows an adaptation of language according to information richness and importance given to the stimuli. In the above example, "ensure all crew members are briefed" is in full text. Procedures that must be taken follow the industry jargon in a condensed form: "would optg capt pls pass this intam to the fsd". Jargon thus ensure reliability of procedures: time in the industry are expressed in thousands. One would say "thirteen hundreds" to express 13:00 hours. Communications such as above show mix-elements of reliability-based jargon for procedures, and full text common language for intelligence.

Informality of intelligence circulation, and past failure of intelligence formalization led airline a to seek for intelligence-strategy integration through the integration of its management communications themselves rather than focusing on intelligence specifically. The case shows that sensitive information, such as intelligence findings, are more likely to be exchanged in a corporate *prepared*-environment. This preparation involves facilitation of intrusions between the organizational cognitive groups (operations, marketing, finance, etc) with the assumption that people "will adopt whatever behaviors and take whatever actions necessary arrive at their goals" (Kaplan, Norton , 1992). Substantial competitive advantages were reached by the airline a during this research that were attributed by management itself to intelligence communications improvements.

Intelligence roots are found in early seekers

When company b was approached for the purpose of this case study, the subject had been considered too sensible to allow investigations of actual operations. The metallurgical company decided to restraint research investigations to past intelligence process, in any time frame after 1946 and before 1980. Investigations for actual process was finally obtained as "complementary research procedures". The following case therefore deals with intelligence activities studied both in their longitudinal perspective (1946-1980) and actual intelligence sub-processes.

A triangulation of methodologies was used for this case. Historical research methods were used to cover the longitudinal study of b's intelligence. A reading and analysis of the corporate archives from early 1930s until mid-1980s was complementary to in-depth interviews of past managers and witnesses (industry associations, clients, experts) of the events studied. Procedures of case study research in sensible information context

were applied to conducting research investigation in actual practice.

The first result was to achieve a periodization of intelligence development in the company b. To situate the context appropriately, intelligence and heavy industries have developed in quite a symbiotic way. Many heavy industries once started as small "formula-seekers", by any means, including intelligence. On 20 November 1811, the German House of Krupp was founded "for the manufacture of English Cast Steel and all products made thereof". All Europe was turned to Great Britain and its so protected secret. Bonaparte who realized the crucial importance of steel offered a prize of £ 1,000 to anyone on the Continent who could match the British discovery. German, Belgian, Swiss, French small start-ups were soon involved in an intensive search of the secret formula. Adventurous business seekers were advertising their "wealth of the most practical knowledge, notably about every kind of machine" that they supposedly gained through their "journeys throughout most of Germany, Holland, England and France" to form their "artistic talents". Friedrich Krupp himself entered a few partnerships (notably with a former captain of Prussian Hussars) to gain some intelligence of the British secret (Batty, 1966). Discoveries of metal alloys, like steel or aluminium, were similarly accompanied by the same kind of "pioneering search".

Like many of its competitors, company b was engaged as soon as the early 1930s in intensive search of natural resources (water for energy, mines for raw materials) in European colonies in Africa. The corporate culture is one of engineers, with all the aura that the title supposed at that time, being considered as 'the work of ingenious people who seek success with means of their spirit' (Pole, 1888). The industry is then highly institutionalized, with rituals of confidence in the engineering 'spirit', good faith in the 'humanistic goal' of technique, and with ceremonial activities mostly linked to scientific and technical discovering. This early 'engineer myth' —and associated ceremonies— will soon constitute an important part of the core formal structure of the industry (Meyer, Rowan, 1977). The former-CEO of b describes his perception of this period in these terms: "I must reckon that at that time, search was not identified as an activity by itself. All was search. It was part of our duty to seek for resources and technological improvement to sustain the company's growth. Everyone was gathering information, but nobody would have said that he was specialised in search". Intelligence can be periodized in three important phases of the corporate evolution. The first phase would be the "formula-seeking" age. Intelligence was linked to the engineer mythology and culture. Main focus was put on techniques and innovation. A fairly open scientific community was providing means of exchanging insights between companies. Competition was maintained on the ground, by pioneers who were seeking natural resources for future production plans. The scientific method of systematic classification reached the Economic Dept. of the company which already possessed 11.000 files on companies in its activity domain domestically and abroad in 1947. In an internal note written the 17 November 1947, the Department rules for compiling its general information are fixed :

- " 1) Every morning, creation of news-clipping files, that are directed to Managers and Local Supervisors. This press-cuttings come from the treatment of major newspapers. A part of these press cuts will be used to review and improve Departmental files. The rest should be destroyed.
- 2) Every day, review of economic and financial journals subscriptions.
- 3) Communication with banks and commercial information agencies, along with Foreign Correspondents.
- 4) Preparation of briefings from collected documents and with the help of selected skilled managers".

In the mid-50s, internationalization of demand and supply encourages the development of a *merchant intelligence*. Extensions of resources seeking and implements of factories in South Pacific, South America and Africa creates a dynamic of the industry that progressively give more power to the merchants. Intelligence activities are still developed in a pioneering style, by visiting plants of competitors, or while going on "technological missions" or during industry associations meetings. Boundary spanners still hold the privilege of bringing back the very core intelligence that would serve as strategy-formulation basis. Thus, during colonization, expatriates played a major economic role and "were often at the origin of the creation of the first commercial flux of the occidental world" in many industries (Oury, 1983).

The early 1960s would put an end to this unworried quest of intelligence by boundary spanners. Former colonies, from all European countries, are asking for their independence. Knowledge and intelligence were going to have a cost (political, financial) and be subject of real economics. After the 1960s, the environment become less "analyzable" for mining and metallurgy industries. The times of pursuing with pride "technical progress" were at their end. Market strength were not going to be so directly derived from technical supremacy and domestic protectionism. As the former CEO of b put it: "In 3 or 4 years after 1960, we found

ourselves for the first time facing competition". The industry was used to a friendly manipulation of the environment, with fair control on political, economic, financial, natural resource foresight. In the shift that occurs in the early 1960s, all the companies of industry, including b, would have to "negotiate" their environment more actively. Once again, it is difficult to describe this phenomenon as the "intrusiveness" known in the literature (Daft and Weick, 1984). All the industry was globally present in the environment, from South America to Africa, Northern America or Australia. It was rather difficult to find a place where metallurgy companies didn't send a team of engineers to negotiate access and installation. If independence movements were expected to cause trouble, or to necessitate further negotiations, dangerous political situations and threats on personnel were not anticipated by companies installed in the colonies.

Thus, it is not intrusiveness or intensive analysis which were lacking, but *intimacy* with the new environmental conditions that were derived from decolonization that suddenly lacked. Later historical events were to confirm the trend of loss of intimacy with foreign environments of the company. Colonies were before the early 1960s cognitively considered as part of the domestic territory. Until 1947, and since the late 18th century, a part of India was called "British India" and British companies operating there were not considering themselves as working in a foreign country. Some clues were found as well in Company b's internal mails and reports that until the end of the independence episode in the Colonies of the Empire, managers were not considering as operating in foreign countries, not being in a phase of internationalization. The word itself appears more frequently in the new organizational charts of the mid-60s.

The 1960s are both the beginning of a decisive internationalization of the Company and a new phase in intelligence development. In a note from the CEO of b on March 22, 1967, the overall internal organization of information is proposed for review as follows: "An Information Dept. is created with the mission, firstly, to inform internally the different units and subsidiaries of the Company, and secondly, of gathering this information in the environment". As the intimacy with the environment decreases, the Company privileges "hard" methodologies, against "soft" approaches that were used in its pioneer years. The beginning of formal planning, and the intensive use of forecasting techniques, leads the Company a the third phase of intelligence development.

An evolution of intelligence language

A consistent number of journeys notes found in corporate archives show an unsystematic and very informal search in b in its first intelligence phase (1930s - early 1960s). Opportunities were discovered by people from the company by discussing with their neighbors on a plane, or in colonial social events, by informal conversations with local politicians or industrials. Notes from managers on geological, technical or commercial missions, show a high level of information richness. Visited places, people who have been met, circumstances are described in full detail, in a style and a jargon that are sometimes more close to Kessel's than to William Pole's reflections on engineering.

The engineering culture, however, caused some trouble to the intelligence development in the Company. In an internal mail of 20 December 1948, the CEO recalls every member of Management Committees that "informations that should be given to the Committee must not in principle concern figures: they should be faithful to meaningful facts and urgent intelligence".

As matter of fact, notes for managers on missions abroad were more intelligence-intensive than the internal communications of the domestic engineers community. Most of the analysis was produced outside the corporate boundaries, just as if competitive cognition was developing itself in extroversion, while internal information management was preoccupied with logistics and respect of everyone's territory.

The need for a "centralized" vision of all international markets led the Company b to an excess of formalization in the late 1960s and during the 1970s. The early 1970s by themselves were the beginning of the implementation of scrupulous investments controls in the Company. When the CEO who was in charge of the company in the early 1980s recalls his arrival, he has the memory "of being unable to find any report produced by the Company with a strategic value".

Case study results of actual intelligence process of Company b shows that intelligence follows patterning of action, in a way that is close to its pioneering years. Managers think they gain most of their intelligence through "personal networks", through trade and industry associations. Phone calls, when intelligence comes from the external world, and face-to-face short meetings when dealing with colleagues are their first means of intelligence collecting and sharing. People who travel intensively are seen as "good sources", when administrative personnel as seen as "sources of small interest". When asked to precise and develop these perceptions, most managers hardly find structured rationalizations. They tend to attribute these characteristics to the specifics of their industry.

Firstly, the company b's case shows that intimacy played a major role in early integration of environmental perception and strategy. Some countries were visited by two to four engineers for the first time. These engineers would finally stand as responsible for the future plants and would spend most of their careers in the same country. The relationship between the men and their environment was intimate.

Secondly, the globalization of the market place called for a centralized vision of the environment. The size of the company rapidly increased during the period studied, and direct communication with the CEO or his close collaborators became more and more difficult. "Hard" techniques of intensive modeling increased the numbers of "structural filters" between the ground truth and the executive decision level. In the first phase of intelligence development of b, noticing and sense-making was realized in a unity of time, space and thinking, that is to say by a small group of individuals, meeting informally and making-sense of what they formerly noticed together in their common mission. When Company b becomes an international large group, the seven to ten original divisions changes to more than 80 in more than four different industrial sectors. Corporate noticing and sense-making is processed through a long hierarchical chain of formal and informal communications. Final sense-making has a high level of successive filterings.

Facing markets opening: intelligence and corporate change

The Company c come to the acceptance of this research because of comparisons with its competitors that showed that their intelligence management was more advanced. We will further see that those assumptions are quite current in many industries. As a matter of fact, the three companies studied in three different industries were all assuming that their competitors had a higher achievement of corporate intelligence activities.

c is facing a deregulation of its markets. Domestic protections and quasi-monopolistic competitive position are under threat of new European Community anti-trust laws. The core business of c is electricity supply, which involves dependence on long technological trends. However, the group —through early diversifications— manage a technology portfolio with various time horizons. Like b, company c's history is one of scientific discoveries and early pioneering in "technical progress". The discovery of electricity and its early industrial applications contributed to the institutionalization of electrical engineers as guarantees of progress. Because supplying electricity was for a long time a state monopoly —as airlines operating and metallurgy— the company came lately to marketing. Scientific culture is still predominant in the group and information is widely perceived as a non-competitive commodity, gathered for the purpose of technical improvements.

Many analogies can be found in b and c Histories. In the early years, a pioneering search was motivated by the quest for natural resources for energy (waterfalls, coal, and lately minerals for nuclear energy). Engineers never perceived themselves as involved in "intelligence" gathering. Looking for energy supply sources was natural activity in the process of achieving technical goals of the corporation.

Today, c's electricity supply is well mastered. The environment for this activity is highly analyzable and current forecasts deals with developments over a period of 40 years. Margins are forecast years in advance, including the variations in inflation, demography, industrial activity, to a degree that reach dozens of decimals after the coma. In this activity domain, the company and the environment are intimately interstructured. c does not have to manipulate this environment, it simply shapes it according to its future needs.

Nevertheless, the company perennial does not exclusively rely upon its electricity supply activity. Margins are weak and mainly state controlled. Few manoeuvres are allowed in terms of strategic thinking. As the national borders open to foreign competition in electrical engines and applications, uncertainty has spread on many parts of the company's future.

In the fairly controlled environment of electricity supply, uncertainty avoidance was achieved by its simplest way, that is to say the elimination of uncertainty. The company is now facing a split in the analyzability of its environments. On one side, a slow pace, mastered environment dependent upon long technological trends and highly compatible with its engineers culture. On the other side, a high pace, uncertain environment, tied to short-sighted technological horizons, poorly correlated with the corporate culture.

The duality of the corporate environment suggests a dual approach in perception and strategy formulation. But the discovery of new applications and the intrusiveness in the new markets are highly dependent upon the state of the electricity supply technology. The company has to watch simultaneously and manage the two environments as they continuously interact in real time.

c is traditionally structured in divisions with a predominance of hierarchy upon strategic business units. The

group is dispersed on the domestic territory in regional divisions, and possess a centralized research laboratory, and centralized strategic planning and marketing departments. These departments are situated in different geographical locations. Just as the airline a, three cognitive groups jealously guard their territories. The research laboratory is a large quiet complex in the country side, miles away from the place where perceiving and sense-making are translated into strategy by marketers and strategic planners.

The Group is fairly concerned with the improvement of its strategy-intelligence integration. Four years ago, a program was started with the goal of shifting the research culture to a more alert, market-conscious cognitive state-of-mind. The program mainly took place in the quiet country complex where scientists and engineers pursue their technical goals in a fairly serene environment. A team of experts of technology and management regularly met to put together their understanding of the situation. A decision was taken to increase the scientists' awareness of applied research and research applications. The project was further extended to markets themselves and a final decision was taken to publish on a bi-monthly basis an internal journal, with "selective and fast distribution", that would collect short abstracts on both technological and market trends. The journal was formatted as an intelligence report, with reference numbers before each short abstract. If researchers were interested in a specific topic, they would use a coupon on the last page of the journal, inscribe their selected numbers, and put it through internal mail. They would receive as a feed-back the complete documents, with names of people with expertise in the subject, both from the company and the "external world".

The program was fairly well received, but further investigations demonstrated that it was doing much regarding the scientific culture. The journal was perceived as a "library product", rather than an encouragement in increasing market awareness. The instrument was acting indifferently on people involved in long-trend technological forecasting and research, and people involved in fast pace, moving, short-trended environments.

The program was costly. A centralized unit was acquiring intelligence reports on new technologies from external consultants, conducting large scale state-of-the-art technology reports with internal teams, and organizing experts meetings (both internal and external) to gain the intelligence that would pour into the journal. Even if congratulated by senior management, the experience was finally not considered as fully satisfying.

A third decision was taken to get interest in individuals' perception and cognition themselves. The company was mastering technological trajectories forecasting techniques. But consciousness that hard techniques were not the issue progressively arose among implementers of the program.

Several problems were soon noticed. People who were attached to state-of-the-art reports redaction were stricken by weariness. These reports were involving a high personal involvement from 8 to more than 12 months. One engineer was in charge of each report. He compiled internal research results, along with reports from external sources. He met with several internal and external experts to achieve his goal. Investigations showed that alertness was declining over time as engineers were pursuing their task. They were feeling "isolated", and sometimes "disoriented" by the amount of work. The company was either not fully satisfied with the time-length that separated state-of-the-art finalization and discovery of a technological rupture in the environment. A period of 8 to 12 months was fairly compatible with the analyzable, stable environment of electricity supply technologies. But more rapid and changing environments required shorter delays in obtaining a broad and meaningful knowledge.

Another problem was in the communication between the researchers and the strategy planners communities inside the company. Noticing and sensemaking in the research community were science and technique oriented, while strategic planners were waiting for "substantial facts" that would be inputs in their market strategy formulation. Communication of intelligence about future potential technological breakthroughs and ruptures were formal and written, in internal memos that were circulated between the two communities. Informal sensemaking was a privilege of both top managers of R&D and Strategic Planning Departments. A considerable loss in understanding was soon detected between perception at the line level among the research community and the corporate level in strategy formulation.

Results from company b's case suggest that shorter delays in sensemaking and intelligence findings formulation were derived, in pioneering early years, by the existence of small groups of managers who informally met on regular basis to give sense together to their findings. Groups meetings were organised in the patterning of action. Managers were intimate with their respective environments and the sharing of an "engineers' culture" was fostering intimacy in intelligence-strategy integration.

In c's case, the two cognitive groups that share their understanding are both geographically and culturally

distant, although most strategy planners are engineers as well. But their organizational learning is dependent upon market understanding, and it has usually been years since they were involved in applied and fundamental scientific research.

Formal communications between the two cognitive communities are vehiculing the final sensemaking that both groups obtained through their specific noticing, perceptual filtering and sensemaking within their own communities of practice. The result is a lack of intimacy between the two cognitive groups. As shown on the graph below, formal extracts of one group's sensemaking towards another group does not foster a ground for intelligence-strategy integration.

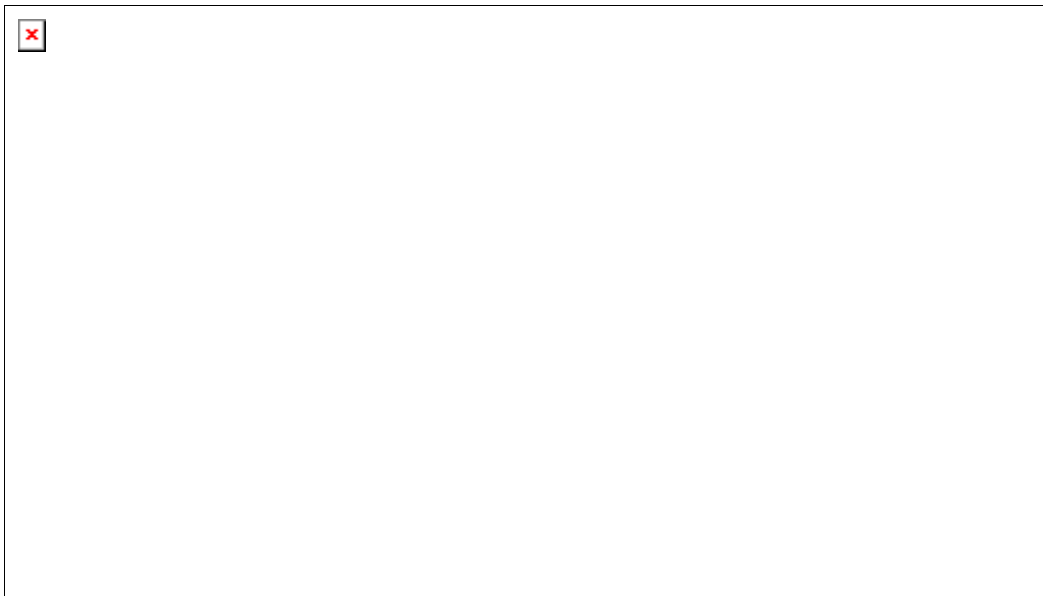


Fig. 3. Perception results

sharing between different cognitive communities

Enhancing intimacy through experience sharing

Two problems —weariness of long technological trends watchers and intelligence-strategy integration difficulty— appear to be strongly correlated. Company c investigated the possibility of purposefully disturbing the slow pace of state-of-the-art reporting by introducing external noticing and sense-making into the process. To integrate intelligence on future technology trends and strategy formulation, researchers and strategy planners met in informal review groups. Multi-disciplinarity of groups composition was sought, on the assumption of a shared understanding of technology.

This methodology corresponds to the opening of cognitive gates between two communities of practice. Experience sharing enhances intimacy between the two cognitive groups and permits an easier exchange of intelligence findings. c is today pursuing intelligence improvement by using the above organizational devices. The team of managers reviewing the process and participating as a core animation group is composed of 45 external and internal experts.

Conclusion

As Dedijer put it (Dedijer , 1989), every model is a lie. It is itself an interpretation imposed on the organization and reduces real life to assumptions and correlations without ever reaching its meaningful nature.

The model in this paper attempts to correlate managers' quality of intimacy with their environment, with intelligence-strategy integration. The airline a's case shows that a corporation, taking lessons from past intelligence failure, comes to the conclusion that effective intelligence is generated by producing intelligence within action patterning. Noticing and sense-making are integrated in a strategy-based system that helps managers to share their information and intelligence.

The metallurgy company b's case demonstrates that loss of intimacy in intelligence processing —due to the increased size of the company and its need for a formal modelization of its internationalization— decreased its foresight ability over time. Today, managers give privilege to informal or face-to-face communications when intelligence is concerned. The electricity industry company c' case show that better results in enhancing intelligence production and use are found in a cognitive approach, at both individual and groups levels.

In these three cases, successful strategies were derived from *intelligence-intensive* formulation process, rather than formal structures or centralized units. This notion may be opposed to the current concept of knowledge-intensive companies (KIFs). It is not knowledge, but "knowledge that connotes purpose" that fosters intimacy between managers and their environment. Our analysis suggest that processes rather than companies should be identified as "intelligence-intensive". We see in the categorization of companies in "KIFs or not KIFs" the main argument against the notion that some companies are more knowledge-based than others. Airline companies, mining industries, and electricity suppliers are not usually perceived as knowledge intensive organisations.

Preliminary discussions with banks for the pursuing of this research in the United States already show that their process could be differentiated as "intelligence-intensive" in different degrees. One of these banks, in its private sector, is maintaining files about its clients' personal history and curriculum vitae with their agreement. Each discussion with the client is followed by the redaction of a "fact-sheet" that feeds the knowledge of the customers, and connote it with purpose. In-depth understanding of the client's personal evolution helps the bank to improve the quality of its services by building an intelligence intimacy with its environment.

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Note:

Quotations of this article should be processed as follows: Philippe Baumard, "From noticing to sense-making: The use of intelligence in strategizing", *International Journal of Intelligence and Counterintelligence*, Volume 6, Number 3, New York: Intel Publishing, forthcoming Fall 1993.

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