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COMPILED BY
MAGNUS HOPPE, SVEN HAMREFORS AND
KLAUS SOLBERG SØILEN

MÅLARDALEN UNIVERSITY COLLEGE IN COLLABORATION WITH ATELIS
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The convergence of Societal Intelligence and Territorial Intelligence to promote Sustainable Development of weakened territories in France

Christian Bourret
Université Paris Est
France
bourret@univ-mlv.fr

Abstract
The need of “Reliance” of our society is a great challenge. Economic Intelligence must help economic competitiveness to develop social cohesion. In a global approach of “intelligence of complexity” according to the positioning of “French style” Economic Intelligence, we propose to analyse the convergence of a “new territory” of Economic Intelligence (“Societal Intelligence”) with Territorial Intelligence to promote Sustainable Development of weakened territories in France leaning on the participation of populations. This approach also corresponds to the matching of two key notions of our post-industrial society: the Network and the Project.

Keywords: Societal Intelligence, Territorial Intelligence, social cohesion, territories, Sustainable Development, Network, Project.

1 Introduction
In the developed countries, our post-industrial society became a “fragmented society”. Globalisation forces a generalized competition, not only between companies but also between individuals, nations and territories. Living for their majority in big cities, the contemporary individuals, especially the most weakened, have lost their landmarks and their identity. For Bernard Carayon (2003) Economic Intelligence is at the same time a factor of competitiveness of companies and territories, this competitiveness allowing to develop work possibilities (work being a factor of social integration) and also helps to finance necessary solidarity to develop social cohesion.

Delegation for Territory Planning or Délegation pour l’Aménagement du Territoire et à l’Action Régionale (DATAR) became Delegation for Planning and Competitiveness of Territories or Délégation Interministérielle à l’Aménagement et à la Compétitivité des Territoires (DIACT). For us, in its social approach, Economic Intelligence meets necessarily Territorial Intelligence.

In this paper, we examine how the convergence of Societal Intelligence ("new territory" of “French-style” Economic Intelligence) is possible with Territorial Intelligence to promote Sustainable Development of weakened territories. First we will highlight the important need of "Reliance" of all our society, linked with a new more global approach of the territory.
Then we will analyse perspectives opened by the meeting of Societal Intelligence and Territorial Intelligence and by the matching of Networks and Projects. At last, we will examine links (in a perspective of social cohesion and of Sustainable Development of weakened territories) between economic activity and social cohesion, both in economic terms (insertion) and in health field, underlining the role of the intermediate associations and of training as catalyst for building collective identity.

2 Need of "Reliance" and new approaches of the territory

2.1 Uncertainties of the contemporary individual and the need of "Reliance"

For Philippe Breton (2004) our society is “strongly communicating but slightly meeting” (fortement communicante mais faiblement rencontrante). For him, the contemporary individual became “phobic in the physical presence of other people, but at the same time closely depending on their virtual presence … communication is also emptied of its substance: meeting with other one” (p. 160-161). For his part, Patrice Flichy highlighted “connected individualism” with the loneliness of the contemporary individual even interconnected in the immensity of the cyberspace. Alain Ehrenberg showed “tiredness to be oneself” (la fatigue d’être soi) and all the uncertainties of the contemporary individual, exhausted by the worship of performance and the "Bougisme" or change for change (Norbert Alter). For Philippe Breton, "no society can survive without imagining a future". For him, “true novelty, at the same time as true danger means that, with the bankruptcy of ideologies, the future in terms of communication via new technologies seems the only one available on the market of ideas” … “we pretend to believe in it but the heart is not” (p. 166).

According to Viktor E. Frankl (1985), "man's primary motivational force is his search for meaning". In his analysis of the evolution of territories, Jacques Beauchard (2000) refers to Régis Debray for whom “the man exists only fit (inscrit) in a territory”. His identity is linked to a territory, emotional, patrimonial. For their part, Edgar Morin and Renaud Sainsaulieu stressed the need of "Reliance" of all our society, underlining the role of the intermediate organizations, especially associations. Renaud Sainsaulieu (2001) stressed the dynamics of the intermediary, of "Reliance", intermediate organizations creating a “social link for transforming”. For him, it is possible to assert that “the change of society takes support necessarily on intermediate structures” … “the intermediary promotes the passage of the world accepted from past towards the invention of the new world for future” (p. 132-133). Having underlined the crisis of democracy, Pierre Rosanvallon (2008) showed the importance of nearness and of citizen's participation (participative democracy) to give it a new legitimacy. Some years ago, he had pointed out the necessity to re-found the Welfare State.

2.2 New approaches of the territory

The approach of the territory evolved. Bernard Pecqueur and Jean - Benoît Zimmermann propose to consider territory as “a construction, a result of practices and of representations of the actors” (Pecqueur and Zimmermann, 2004). The diversity of territories is underlined. In 2006, this evolution corresponds to the change of name of DATAR, born in 1963 at the time of the voluntarism of the general de Gaulle’s government in DIACT, already evoked. For his part, Jacques Beauchard (2000) considers that the territory is built by the meeting of two aspects: the "patrimonial" territory (identities, mentalities, perceptions) and the "transactional" territory (mobility, exchanges). In that case, we can, like in the articulation between Economic Intelligence and Territorial Intelligence (or between the individual and the collective,
the local and the global, the order and the disorder, the static and the dynamic), talk about "Dialogies" or double logic, at the same time complementary and opposed, in a global perspective of “intelligence of complexity” (Morin – Le Moigne, 2003) and of Sustainable Development.

The territory is built and rebuilt by convergence and synergy of projects (Bourret, 2008), this synergy that can be speeded up by new uses of ICT – Information and Communication Technologies (Dumas-Gardère-Bertacchini, Girardot). We give a particular importance to the territories where social links are weakened. These territories correspond to suburbs of big cities with their big buildings, their insecurity, their high unemployment rate, the lack of identity shared by populations in majority immigrated, cut from their roots, where the young people especially do not find meaning to their lives (Sarcelles, La Courneuve, Evry, Le Mirail, Vaux en Velin …). There are also areas in de-industrialization, that can be populated by immigrant population (Seraing in Belgium) or have still a strong economic and patrimonial local identity: Saint-Girons (Ariège) with the crisis of paper mills industry or La Ferté-sous-Jouarre (Seine-et-Marne) and millstones industry. There are also areas victims of the rural exodus where the ageing of the population is conjugated with catastrophic decrease in doctors and medico-social people numbers.

3 The meeting of Societal Intelligence as new territory of "French-style" Economic Intelligence with Territorial Intelligence

3.1 The specificity of "French-style" Economic Intelligence

The Martre’s report (1995) defined Economic Intelligence as “all the actions of research, processing and spreading (with the aim of its process) of useful information to the economic actors” (in Duval, p. 83). This definition of Economic Intelligence emphasized the notion of cycle of information processing. This report made concrete the challenge of promoting Economic Intelligence in France.

In his preface to “The new territories of Economic Intelligence” (Duval, 2008), Alain Juillet, high official in charge of Economic Intelligence in France, explains "French-style" Economic Intelligence. For him, in the extension of the Carayon’s report (2003), it helps, in a background of generalized competition, to capitalize on strong points while reducing weak points. To achieve this aim, we must be able to acquire necessary information. On a theoretical level, Economic Intelligence is “mastery and protection of useful strategic information for all decision-makers”. On a practical level, it is “a state of mind, a method and tools which allow to gather and to treat all data and necessary information for the decision-making and its implementation” (in Duval, 2008, p. 7).

Thus, he differentiates "French-style" Economic Intelligence from Anglo-Saxon approaches “too economic targeted”: American “Competitive Intelligence” being too often reduced to benchmark and British "Business Intelligence” more enlarged but nevertheless not focusing a lot on external environment. So “French-style” Economic Intelligence is closer to Stevan Dedijer’s approach (university of Lund, Sweden) than to Michâel Porter’s one (Harvard). The widening of the field of action of Economic Intelligence and the involvement of other actors “is going to allow to the State to focus on Territorial Intelligence” (p. 10).

The works dedicated by S. Dedijer since 1972 to Social Intelligence as lever of development are situated in a multidisciplinary prospect. He defines Social Intelligence as: "all the activities of a society, connected with the intelligence, the capacity to adapt itself, to answer changing circumstances, to realize decided
goals of development " (in Clerc, 2004, p. 34).

Economic Intelligence spreads to "new territories": Juridical Intelligence (with the development of Anglo-Saxon "soft law", often in opposition to Roman law, and now the development of Asian law), Financial Intelligence with the help of the chartered accountants, Cultural Intelligence, with a notably stake for France to offer a new model of strategic reasoning in support of stakes of the French-speaking world or francophonie with the paper of the sector of tourism. He underlines the importance of Humanitarian Intelligence and then especially of Social Intelligence which “would possibly become one of the pillars of Economic Intelligence of tomorrow”. We can also find Sports Intelligence. Alain Juillet concludes by underlining the articulation of Economic Intelligence with the stakes of the Sustainable Development, giving a “tremendous opportunity for a new positioning of France”. Therefore according to him, Economic Intelligence constitutes “first of all a state of mind leaning on a method and tools without vocation to remain closed to the only sector of economy”. He considers that Economic Intelligence is a “too limitative conception and we progressively must go towards a concept of Strategic Intelligence” (in Duval, p. 15).

Philippe Clerc explains the specificity of “French style” Economic Intelligence by a match between Social Intelligence (Swedish school) and Competitive Intelligence (in the Anglo-Saxon world). He underlines the concept of “Social Intelligence" (Dedijer) which he prefers to qualify as “Societal Intelligence”. He also refers to the French historian Fernand Braudel.

According to Philippe Clerc, Social Intelligence or “intelligence of the world” is very ancient. At all times, man wanted to understand. He refers to J. Bottéro and to Mesopotamian’s legacy and notably Sumerian’s legacy (“the curiosity of things”). He recalls then the Greek mètis or the tricks of intelligence and mind of alertness. This “capacity to survive” recalled by Dedijer is shrewd intelligence, creativeness of Ulysses, for a long time overshadowed by too rational thought and triumphant science (logos). It is necessary to re-question the mètis: a form of intelligence to think a changing world. It is a question of being able to discern the weak signals.

For Stevan Dedijer (2003), “development is identical to Cultural Evolution based on the evolution and revolution of Intelligence”. He defines culture as “ everything man made in every society: values, social structures, politics, technology, norms, habits, personalities, etc”. For him, “the fundamental fact of our time is: first, everyday things change faster, second, every day people are more different from each other than they were the day before”. In this same last paper (2003), he enhanced Sweden as “an intelligent state”. Economist, S. Dedijer was also an historian. He focused on mentalities and representations. He pointed out 15 national characters in Sweden, among them: curiosity, all kinds of creativity and inventiveness are stimulated and rewarded, travelling abroad to develop intelligence of the world”.

Social Intelligence puts any strategy in a richer context. “To understand other people is so important as to eliminate a rival”. The matter is not any more competition but “competitive cooperation”, promoting creativity and information sharing.

Societal Intelligence is in the heart of new strategies of Sustainable Development, which tries to conciliate antagonisms and tensions between the logic of economy (return on investment) and quality of life, between globalisation and planetary solidarity and the specificity of different territories, with the societal responsibility of companies.

Social intelligence, according to P. Clerc, constitutes a tremendous lever. It
allows to reinvent the way of the transversality and of the transdisciplinarity to overcome our blindness. Nowadays, when the requirement of cooperation becomes again vital, it is an opportunity to develop a collective intelligence (in Duval, p. 117).

3.2 Matching Societal Intelligence with Territorial Intelligence

For us, this evolution of Economic Intelligence towards a more global "strategic" approach, corresponds to the definition given by Edgar Morin and Jean-Louis Le Moigne about “the intelligence of complexity”: an holistic (global) approach of a whole system or a specific field. In its societal dimension, we think that Economic Intelligence must be matched with Territorial Intelligence, always in the same perspective of holistic approach of the territory: Societal Intelligence must be fit in a territory and Territorial Intelligence includes inevitably a societal dimension as the works of European Network CAENTI (Coordination Action of the Territorial European Network of Intelligence) showed it.

During the last CAENTI’s conference (Besançon, September, 2008), Horacio Bassano (University of La Plata, Argentina), defined Territorial Intelligence by the following equation: IT = UT + PAT + SD or Territorial Intelligence = Understanding of the Territory + Participation of the Territorial Actors + Sustainable Development of the territory. The participation of the actors of the territory and the involvement of populations in a perspective of Sustainable Development constitute the mere specificity of Territorial Intelligence with all the stakes of information sharing and building a collective intelligence. We believe that this participative dimension of Territorial Intelligence represents a major tool of refoundation of democracy, in its dimensions of nearness and of involvement of the actors, in the perspective drawn by Pierre Rosanvallon (2008). Territorial Intelligence also rests on ICT who give an additional synergy to the territory’s projects. According to Jean-Jacques Girardot (2007, Caenti Website): “Territorial Intelligence brings technologies of the society of knowledge in service of Sustainable Development of the territory”. Since its origin, this use of ICT is completely fit in Economic Intelligence, notably in its aspects of technological and competitive watching (for example tools developed by the team of the professor Henry Dou in Aix-Marseille III University). The process of Territorial Intelligence developed in societal field by actors-researchers to build contextualized collective knowledge often begins, as in the case of the Catalyse Method (J.-J. Girardot, University of Franche-Comté) by a territorial diagnosis with a particular importance given to social diagnosis, as in the case of Seraing (Belgium).

3.3 – An approach by Networks and Projects for Innovative Organizations

The convergence of Economic or Competitive Intelligence in its Societal approach with Territorial Intelligence also corresponds to the matching of two key notions of our post-industrial society: the Network and the Project. According to Manuel Castells (1996), Networks become the basic units of our society. Key social organizations and activities are organized around electronically processed information networks. Many searchers do not go so far. For Jan Van Dijk (1999), the individuals, groups, organizations, though they may increasingly be linked by technical networks, are still essential, with the specificity of Social Networks. A special issue of Informations sociales Review (2008) underlined the importance of Social Networks with the key role of interactions and relations between “social units”.

Our Networked Society is also a Project Society. According to Jean-Pierre Boutinet, the Project is everywhere,
particularly in France where it become a quasi legal obligation: project of society, of company, of department, of student, of unemployed people, of holidays, of life, etc. For us, this complementarity of a Networked Society in its Social Networks aspects with a Project Society constitutes a global framework for a conceptual approach of territories in a Sustainable Development perspective. In an operational point of view, it implies the articulation of management of project methodologies with that of analysis of Social Networks such as in the Catalyse Method.

To create Social Intelligence, the synergy of networks is essential. Philippe Clerc (2008) points out the stakes of development of “Social Capital”. He defines four entries for evaluation of networks’ social performance: the assets in social networks actions and information developed or types of active networks (weak or strong links), relational assets (map of networks of allies), the assets of participation (involvement of actors), the assets of trust (2008, pp. 110-111).

3.4 - The importance of context

For Philippe Clerc, Societal Intelligence “allows to replace any strategy in a richer context where cultural factors complete widely analyses” (in Duval, p. 112). With the notion of context, Economic Intelligence in its societal aspect, converges strongly with Territorial Intelligence. Alex Mucchielli or Guy Le Boterf highlighted the importance of context for action: organizations can be considered as a “pertinent context for action” (Mucchielli, 2006). This pertinent context for action differentiates from the more global context in which any organization evolves.

Alex Mucchielli and Claire Noy proposed a “method of contextualization by the fields of experience and of interactions” (2005, p. 191 - 218). This method answers four goals: give a frame to “constructionist” researches to organize data about ground level gathered from qualitative surveys; take temporality into account in comparison with both fields of experience (past) and of interaction (today); define the essential elements of a situation; put the actor (using a device) and his project in the centre. It differentiates four elements: actors' community, cultural space contexts, projects (intentions of actors), devices (technology). It is based on the analysis and the modeling of four processes in interactions: process of positioning (linking up actors and contexts), process of relational practices linking up actors and devices, process of possible forms of actions, linking up contexts and projects, process of logic of action linking up project and offered devices.

This method opens to two perspectives: evaluation or forecast. Corresponding to the notion of “generalized communication” developed by Alex Mucchielli following works of the “invisible college” of Palo Alto, it allows a systematic analysis of the complexity of Networked Organizations in their territorial dynamics. It also allows articulation between approaches of Economic Intelligence in its societal dimension and approaches of Territorial Intelligence.

4 Economic activity and social cohesion

4.1 A society weakened by unemployment and exclusion with the crisis of suburbs as revealing

Our consumer society (also society of wastage) is so unfortunately that of poverty (which concerns 6 - 8 million people in France) and of exclusion. Progressively, in our post industrial society, exclusion became the new face of poverty (Bourret, 2006). The report of the National Observatory of the Poverty and the Social Exclusion (2006), relieved by Martin Hirsch, then president of Emmaüs, had underlined that while the gap increased between the rich and the poor people in our developed societies, job constitutes no more guarantee against
poverty. While in the past poverty concerned persons in situation of break, isolated aged persons, or jobless adults, from now on, it is possible to work and to be poor: partial time, precarious job … To try to find a solution in revaluing work, Emmanuel Hirsch become “high commissioner in active solidarities” (haut-commissaire aux solidarités actives) in 2007 worked for the creation of RSA (income of active solidarity or revenu de solidarité active) which is going to be operational in June, 2009. It deals with reconciling the solidarity and the return to job. While the RMI (minimum income of insertion or revenu minimum d’insertion) set up since 1988 concerned about one million persons, RSA should concern 3.5 millions.

Hervé Azoulay (in Duval, 2008), applied the Societal Intelligence to the case of suburbs. Suburbs constitute a revealing of the crisis of all our society, as riots of November, 2005 showed it. The young people rebel when they have no more hope and feel foreigners to the world where they have to live (p. 120). There is a major risk of social explosion when young people have nothing more to lose, the oldest resigning themselves more. In spite of 40 thousand millions euros invested in about fifteen years, the policy of the city (politique de la ville) is a failure. Balance seems broken and conflicts are not any more regulated. Nobody takes care of the community. The rich people become richer but they especially do not want to mix a ny more. The society risks being cut in two: those who have everything and those who have nothing and, between the two, we find hate. The explosion approaches. To prevent it, for Hervé Azoulay, it is necessary to find new responses.

4.2 The cooperation of Networks for Sustainable Development

For S. Dedijer, Intelligence is the main lever for development. Work implies social integration. So giving job to unemployed people is a major stake to rebuild social links. This challenge can be considered in a dynamics of project around a holistic approach centred on the process of reconstruction of the person in difficulty with the help of social networks. Gérard Lefebvre (2005) identified five steps of self-reconstruction: restoring confidence and motivation, acquisition of competences, official recognition of know-how and of competences, setting up individual projects of insertion, and, finally, returning to job (pp. 135-139). Job is the major vector of reconstruction of identity by self-respect and social integration. Job is a fundamental element of the social contract. For a lot of people its loss means exclusion irremediably. For Hervé Azoulay, there exist possibilities of jobs in the suburbs but differently. Subsidies do not give convincing results, the challenge is searching other ways. He makes analogy with cellular growth. There are many talents in the suburbs which should allow to develop economically viable projects. It is a question of multidimensional approach and developing a global knowledge of the system. Hervé Azoulay warns us against an only Cartesian approach (p. 123). It is a question of building a training organization with a bottom-up and not a top-down approach.

Leaning on the report of the Montaigne’s Institute “Poverty, exclusion: what the firm can make” or Pauvreté, exclusion : ce que l’entreprise peut faire (2006), Hervé Azoulay stresses the importance of networks to answer the crisis of suburbs by the articulation of three networks: firms, associations and local authorities. The issue is transforming needs into concrete proposals, by optimizing resources and interfaces of communication. Organizations in networks are flexible at the same time, open, quick, interactive. Hervé Azoulay highlights the importance of creative disorder and of risk-taking. The key of success is in the dynamics of the partnership and therefore in the interface of meeting to
communicate. Respect for one another and trust reinforce relations. Hervé Azoulay stresses the importance of the notion of social undertaker and collective training. In the extension of the report of the Montaigne’s Institute, he proposes to create referent's office in insertion in the big firms or to combine with insertion associations. He also highlights the importance of the regional level in economic development. In France, economic development and professional training are the main domain of intervention of Regional Councils. He also stresses the importance of voluntary work in firms, especially referring to newly retired people. He outlines the importance of a federal network of the partners (an “ideas-actions network”) to choose projects according to societal needs and their economic potential.

4.3 The territory as synergy of local projects and area of building trust

We have recently proposed to consider the territory of nearness as a synergy of local projects (ISEG, Lisbon 2008 and Journal of Projectics, 2008). This dynamics can be speeded up by information and communication technologies (ICT) allowing to share information better to go towards a collective construction. The role of global organizations of interface as catalysts of trust is essential (chambers of commerce and industry, chambers of crafts (guilds), chambers of agriculture, associations notably in IEA – Insertion by Economic Activity...). This synergy can particularly be developed in proximity networks. In this point of view, the communities of towns (according to a law on 1992) and the new "pays" (1995 and 1999 laws) are interesting. Bernard Leurquin especially highlighted "the service’s vocation" of "pays" (2003). In this perspective, the development of services at home is particularly promising. They created more than 100,000 jobs a year for 3 years. In 2005 was organized a national agency of services at home (services à la personne).

The building of trust is essential. Gilles Le Cardinal and alii offer an original method to organize cooperation in complex problems: the FAcT-Mirror Method. The method's originality lies in describing all the interpersonal correlations in a complex situation by making an inventory of the fears, attractions, temptations (FAcTs) that the participants could feel in relation to one another. With a new, common representation of the problem, the stakeholders develop structured recommendations, leading to processes of empowerment and co-operative action (2001).

4.4 The importance of training as vector of development

Training constitutes an essential stake. Innovative Intermediate Organizations (often associations) constitute training organizations: they form their members but also are built by knowledge and competences of all their members, including patients (healthcare) and persons in trouble. In Healthcare Networks, the constitution of groups for talking (groupes de parole) or the implementation of "citizens-relays" is decisive. The stake is particularly strong in the suburbs as Hervé Azoulay underlined it. He was relieved by Mary Brigaud (2008) who, by studying the particular case of the department of the Essonne, showed interactions between training of youth people in a precarious situation and one of the “new territories of Economic Intelligence”, that of “Sport Intelligence”, to make easier the social integration of the young people by training for getting a job.

In this perspective, University Institutes of Technology (IUT) of Melun-Sénart and of Marne-la-Vallée set up, with the support of the Regional Council of Ile-de-France, certificates of creators' activity in partnership with local missions (missions locales), associations of management
(boutiques de gestion) and various associations of the sector of insertion. Social insertion is connected to health, especially if health is considered across the global definition given by WHO (World Health Organization): “Health is a state of complete physical, mental and social well-being and not merely the lack of disease or infirmity” (1946).

5 Two examples: IAE (Insertion by Economic Activity) and territories of Health

First of all, Sustainable Development consists in using in a better way all the available resources in a territory. S. Dedijer underlined that “a highly motivated people can and has to use any means to promote the interests of the community to which it belongs” (1987). This point of view meets our approach of helping to develop territory by a synergy of projects.

5.1 Insertion by Economic Activity (IAE)

We have already highlighted (Bourret, 2006) the importance of structures of insertion by economic activity (SIAE) within social and solidarity economy. The case of the Gardens (Jardins) of Cocagne Network, born about twenty years ago near Besançon, is particularly interesting. Today, the Gardens of Cocagne, represent a network of 100 structures. In the department of the Ariège, in the Central Pyrenees, the municipality of Saint-Lizier supplied agricultural lands to the CIDEL (centre of initiatives for local development). It is the first site in Ariège approved as an activity of social utility about insertion by the economic. It joined the network of Gardens of Cocagne. It is both a question of reinserting by work in the field of the organic farming persons in difficulty but also of developing the solidarity with the local population by the weekly delivery (by membership subscription) of products of the organic farming. The office of the CIDEL’s association is located in the building of the chamber of agriculture in Saint-Girons. From this example of a local initiative, we see how, in the sector of social and solidarity economy, it is possible to articulate the reconstruction of the person in difficulty, the citizen's participation, the solidarity and logic of Sustainable Development of nearness territories. It is from such experiments that the mere articulation of Economic Intelligence (notably in its societal aspect) with Territorial Intelligence is built where populations live.

5.2 Health and nearness territories

Health is a major stake of all our society, especially in the weakened areas. In Seraing (Belgium), in old steel and mining basin of Wallony, that of populations, often of immigrated origin, is particularly worrying. The asbl Optima (asbl: non profit-making association in Belgium) work in territorial animation resting on the participation of all actors in the service of welfare (Cusumano and alii, 2008). This action of social engineering began with a territorial diagnosis resting on Catalysis Method developed by J.-J. Girardot. In a very different way, health situation is also worrying in rural zones, where the retiring doctors are seldom replaced from now on. New solutions are tested as Healthcare Networks or Pluriprofessions Healthcare Homes. The case of Bletterans (Jura) was recently mediatized. It uses information and communication technologies. A visioconference tool allowing activities of telemedicine was set up. The Pluriprofessions Healthcare Home of Bletterans also uses the services platform of Franche-Comté Santé and notably its shared electronic medical record. In the Hautes-Pyrénées, the network of palliative care become Healthcare Network Arcade also uses the shared electronic medical record set up in Franche-Comté.

The mutualization of these nearness structures is topical. Healthcare Networks gather together as in Alès (Gard) with the Reseda association or in houses of
Healthcare Networks in Saint-Denis or in Savoy (Chambéry). Different organizations can be regrouped in the same place. It is the case of the Healthcare Network devoted to the elder persons (Echo-Santé), with the CLIC (Local Center for Information and Coordination) for elder people, with the EHPAD (Establishment of Hospitalisation for Dependent Aged Persons) and associations of home help (ACMAD and Ariège Assistance) in the offices of the old hospital of Saint-Girons (Ariège) and also the local service of Hospitalisation at Home (HAD). Thus the actors learn to know each other, and begin to work together. It is a first stage towards the share of information and the building of collective knowledge. There also is an example about the convergence of Societal Intelligence with Territorial Intelligence.

5.3 Immaterial patrimony heritage and TIC
We highlighted the federal role of the Internet portals (cf Franche-Comté Santé) and the use of the telemedicine by the Pluriprofessions Healthcare Home of Bletterans. E-health is one of the privileged fields of convergence of Economic Intelligence and of Territorial Intelligence around ICT, in the perspective defined by J.-J. Girardot (2007).

The ICT can constitute (Bertacchini, Dumas) a lever of territorial development which supports the construction of the territorial capital. This meeting of the territory of proximity and the ICT concerns the economy of immaterial (Levy-Jouyet, 2007). But in the weakened territories that we study, the interactions and the collaborative exchanges are much more limited in Couserans, Seraing’s district or La Ferté-sous-Jouarre’s community than, for example in the French Pays Basque or in areas like Sophia-Antipolis, near Nice. In the weakened areas, the construction of the Territorial Immaterial Capital is only at its beginnings. It must be built by the convergence of Societal and Territorial Intelligence approaches in developing interactions between all the stakeholders and by the participation of the local populations. So it is a challenge for matching Networks and Projects.

5.4 Application in two cases studies
We will apply our global approach about "Intelligence of complexity" by the convergence of Societal Intelligence and Territorial Intelligence and by that of Social Networks and Projects to two cases studies by simultaneously using the tools of the Economic Intelligence pooled by the Resource Centre of the group of experts about Economic Intelligence (CNRS / Marne-la-Vallée) and the Catalysis Method about Territorial Intelligence (J.-J. Girardot, University of Franche-Comté). These two case studies are located within the department of Seine-et-Marne (Ile-de-France). The first concerns the territory of the municipalities of La Ferté sous Jouarre, area in economic and social crisis, with stakes in the struggle against exclusion and precarious health of populations. To widen our visions, we will then look at the case of SAN (Syndicat d'Agglomération Nouvelle) of Val d'Europe, an area in full economic development around the TGV International station in Chessy, the most important commercial centre in Europe in Serris and the key role of Disney Resort as space planner.

In both cases, we will focus on economic development issues and on Social Networks in a context of Sustainable Development Projects with the importance of building a collective identity both in an area in decline or in strong economic development. So different situations should allow interesting comparative analysis.

6 Conclusion
In this paper, we underlined the convergence of Economic Intelligence, in its “new territory” of Societal Intelligence with the Territorial Intelligence, at the
same time from a conceptual point of view and also through the concrete experiments of projects of territories in a holistic approach of “intelligence of complexity”. These projects also materialize the convergence of the two key notions of our post-industrial society: the Network and the Project.

Our society is at a crossroads. Viviane Forrester has spoken about “economic horror” but also outlined the ongoing changes: “when will we become aware that there is not crisis, nor crises, but mutation? not that of a society, but that, very drastic of a civilization?” (1996, p. 10). For his part, Pierre Musso criticized networks and cyberspace, showing their ambivalence: if they can favour a society of knowledge, they can also allow the implementation of a society of the control of the individuals at a never reached level (2003). For Philippe Breton “a society without future can only destroy itself” (2004, p. 166).

The competitiveness of firms in the global world is necessary to be able to finance policies of social cohesion (Carayon, 2003). The convergence of Economic Intelligence in its societal aspect with Territorial Intelligence can give us tools of analysis (social engineering) and for building networked partnerships as we see in the case of suburbs. It also gives tools of social engineering and of societal watching. Philippe Breton also stressed the risk of failure of a future only centred on new technologies. The questions of the understanding of a more and more complex society and of the meaning for the humanity’s destiny meet. Man always searches a meaning to his life. He cannot live without it (Frankl). His vital need of landmarks implies his fitting in the proximity territory more than ever, as his citizen’s participation to build a new nearness and participative democracy.

The extension of the financial then economic crisis since September, 2008 with the increase of the unemployed people number makes essential the stakes of social cohesion and gives all their importance to the matching of the Territorial Intelligence and of Economic Intelligence particularly in its societal aspect.

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Can military education benefit from the study of competitive intelligence?

Didier Danet
Centre de recherche des écoles de Saint-Cyr Coëtquidan,
Pôle Action globale et forces terrestres, 56380 Guer, France,
didier.danet@st-cyr.terre.defense.gouv.fr

Abstract
Competitive intelligence is one of the optional courses French Cadets can attend while they are educated at Saint-Cyr. In the context of “New Wars” and “New Army”, it could be relevant to place a greater emphasis on competitive intelligence in the curriculums.

Keywords: Competitive intelligence, French Cadets, New wars, All Volunteer Force.

In France, competitive intelligence is part of curriculum in most of engineering and business schools. Many of them deliver Bachelor or MBA degrees in which CI is considered as a core competency. Nice, Toulouse or Tours-Poitiers are widely recognized as top places for students who want to train in CI.

But, if CI is obviously a core competency for students who intend to pursue a career in business world, is it the same for civil servants, especially for those civil servants who are judges, policemen or soldiers. One can easily imagine that policemen or judges who have to deal with intellectual property breaches, computer frauds or industrial espionage are more efficient and make better decisions if they understand what the CI problems consist in, what the stakes are and which solutions can be usefully provided. To some extent, judges and policemen take advantage from CI training. But, what about armed forces officers? Can military education profit from the study of CI? Is CI more or less relevant for cadets training than history, law or game theory?

In Saint-Cyr, the French military academy, cadets can train in competitive intelligence since fifteen years. At the beginning, CI was clearly considered as a non core course, a tool. The course was designed to “create a bridge” between military and business world. Cadets were encouraged to focus not only on military topics but also on civil topics such as business administration. Since that time, cadets pay a greater attention to CI even if it is not yet a core part of the academic training.

Competitive intelligence at saint-cyr: assessing a twenty years training

CI: An optional part of the curriculum
Since the end of the 70s, the concern about the standard of cadets education is a common matter of faculty and officers in Saint-Cyr. Everyone agree on the fact that “new wars” (Munkler 2004) are very
different from “Cold War”. Yet, do “officers of the 21st century” have to be different from the elder ones? Do they need to be trained in new skills and abilities? If yes, what skills and abilities are relevant?

In the past years, like other military academies, (Vandergriff 2006) Saint-Cyr has been led to overhaul its curriculums; the school has experienced two main reforms (1982, 2002). The reform of initial training launched in 1982 has deeply transformed standard of education. (Augé 2008) The most obvious change relates to the duration of the trainings content. In the 80s, cadets were studying for one year in Coëtquidan and they were graduated on a BA or BSC basis. The typical curriculum is now three years long and the cadets get a Master’s Degree. They now attend an interdisciplinary and global course in which military culture and academic knowledge are closely related in order to educate cadets to the “art of leadership”.

Revamped courses are now opened up to the academic world, to Grande Écoles and foster exchanges between the future civil and military managers. A wider range of courses and options has been implemented in the three masters (Science, Arts, Management) even if a “common trunk” is preserved in history, law, political science, international relations, foreign languages… Competitive intelligence is not part of the “common trunk”. It is one of the courses that cadets attend during the fourth semester if they specialize in Economics. About eight to ten people among forty five enrol for this course every year. Others specialize in History, Management, Law, Communication or Sociology. They attend a seminar (28 hours) and they can prepare their master thesis in CI.

CI: starting difficulties
If Economic department had a “Frequently Asked Questions” topic on the school website, the most frequent one would certainly be: “Why do you teach such courses as competitive intelligence to cadets? CI is a matter for business people, not for Army officers.” Those who are reluctant to teach CI in military academies usually advance two reasons.

Make war, not economics
Implementing the reforms of 1982 and 2002 has not been a prone-problem operation. Most of cadets and officers are convinced of the advantages they will get out of them. This is why these reforms have been carried on with constancy and in the same general direction. But, everybody seems to have an idea of what cadets training should be and does not necessarily agree with the “new” education model.

Some people think that a soldier or an officer must be on his guard not to become an “intellectual”. A cadet who spent two years in a “preparatory class” and passed the entrance examination of Saint-Cyr has well enough academic knowledge to be a good officer. No need for him to go on with such esoteric and boring topics as military history, law of war, political science, public management, foreign languages or macroeconomics.

This critical thinking embodies two different points of view.

On the one hand, those who profess to be “loudmouth” are harking back to the old story. Now and again, they regret the good old days, when soldiers and officers were “tough guys”. They subscribe to the saying: “Thinking is the beginning of disobedience”. Still in december 2008, one of these “loudmouth” was writing a typical
commentary on a famous military related blog site: “Obviously, Saint-Maixent [non commissioned officers academy] and Saint-Cyr do not anymore educate cadets to give battle to the enemy... Head of Army wanted to change Saint-Cyr into a “supercampus university” widely open to enterprises... An army just needs leaders, “guys with b...”, not “demagos””.

More seriously, shaping officers for the 21st century raises a fundamental question regarding goals of education. Do military academies intend to train platoon leaders or commanders in chief?

Training platoon leaders means that training contents must be very hands-on. Many cadets are very fond of being taught about professional skills and “leadership recipes”. They are afraid to be in charge of professional soldiers and NCOs who will have more practical experience than they have. They want to leave the “high school universe” and fit in a military world they have dreamed of. So, improving their force of personality is their most important challenge: being the leader of a team, being self confident and charismatic, setting an example to be imitated, making the difficult decisions... Rightly or wrongly (wrongly in our opinion), they think that academic education is irrelevant to achieve this goal and find refuge in tasks or activities that look close to supposed regiment life. Not surprisingly, this attitude of mind is common to all students who are just about to get their first job and fear a lack of practical skills.

Concerning military education, this usual demand of the students get the backing of senior officers who look for budgetary savings so that they advocate shorter curriculums and place most of emphasis on physical and elementary professional skills. For the more, they think that cadets will learn on the job and only a few of them (“high potential profiles”) will benefit from a thorough academic education.

The educational project of Saint-Cyr is quite the opposite of this first vision. The curriculum is designed to train cadets how to be a good leader in the short-term (junior officer) and to fill executive positions later in their career (senior offices). Training programs must combine hands-on exercises (the “drill”) and general knowledge and specific courses in managing men and structures. Academic courses and military training are not in competition with each other. All of them play a part in shaping both exemplary leaders and adaptive officers with broaden professional and cultural background. Such an education is very demanding for cadets and academy: busy schedules (twice as many hours as other masters students), obligation to improve physical strength, mental agility and interpersonal skills in the same time, “diversity management” to tap civilian and military talents... More resources are needed to achieve this ambitious goal. But this is a quite low price to have at Army’s disposal a “workforce” capable of facing unpredictable challenges of new wars.

Officers are not the scouts of businessmen

Great efforts have been made in the 90s to promote “business intelligence” in military world. But, the mainstream speech is both simplistic and clumsy.

According to this mainstream speech, French forces are involved in many “peace keeping” or “peace enforcement” operations all over the world (Africa, Balkans, Middle East...) and they have to fight in order to rebuild peace and security in those countries. But French companies do not take advantage from these sacrifices; most of reconstruction bids are won by foreign firms and they rarely come onto these new markets unlike American, Chinese or German competitors. French soldiers pay a lot to restore peace; they often suffer losses and injuries. But French companies do not benefit from peace dividends. Such a gap is not normal and the implementation of a “business intelligence” process, involving Army and companies, may help to fill it. In this
process, soldiers would have to gather economic and technical data after which business people would use information to prepare more appropriate and competitive tenders.

This kind of speech is simplistic and clumsy for many reasons. First of all, mission and possible losses are devalued because they look like being nothing but “return on blood investment” in a business environment. Yet, men do not risk their lives to fill order books. The speech also gives the impression that French soldiers are at a few companies service and that they are just operators in business intelligence systems which are designed without them. In a word, officers consider themselves as Nation’s servants; they do not want to be the scouts of businessmen. Cadets are deeply reluctant to be part of such a “business intelligence” process.

This is the reason why the legitimacy of “competitive intelligence” must take roots in a specific approach which involves the fundamentals of CI, needs of forces and military environment. CI course must provide cadets competencies that are focused on their own job and increase Army’s ability to confront with restricted human and budgetary resources.

**Competitive intelligence at Saint-cyr: changes to come**

**CI and new wars**

The structure of CI course (seminar + master thesis) has remained unchanged since it was implemented in the beginning of the 90s. During this time, there were dramatic changes in how wars are to be fought. According to Münkler among others (Desportes 2001; Desportes 2008; Smith 2007), it can be argued that it is now necessary to talk about “new wars”. The recurrent conflicts that plague the world today are ranging from genocides and “warlordism” to mass terrorism and private military companies. Regular warfare, in which war is waged between states and their representatives, culminates in a decisive battle, and produces a decisive outcome, is an exception to the rule. Considering the last twenty years, when nations went at war, military operations quickly ended (Balkans, Iraq, Afghanistan, Georgia). In each case, the opposing armies were unequal and the strongest won within a few weeks. Apart from these regular wars, conflicts are increasingly asymmetric. Militias such as Hezbollah of Hamas devise innovative tactics to confront their adversaries (urban battle or swarming for example) (Goya 2006). Rebels are compelled to adopt strategies that impose indirect costs on the state, typically by using violence against civilian populations, humanitarian organizations or peacekeepers. New wars tend to last as long as warlords or terrorists leaders have access to enough funding, and they end not in a decisive battle but gradually, fading due to exhaustion. Insecurity slowly decreases and violence can suddenly arise. (Krulak 1997)

![Figure 2 - Stabilization process](image)

*Figure 2 - Stabilization process*

(Centre de Doctrine d’Emploi des Forces (CDEF) 2007)

Such conflicts blur the line between war and peace, between war and crime, so as to war no longer occupies a distinctive conceptual space. Armies have to make war amongst population and they have to “win hearts and minds”. If need be, they have to face bomb attacks, ambushes, snipers so that they have to permanently keep on theirs guard and use violence if necessary. But, most of the time, soldiers...
live in cities, have talks with people on markets and in the streets, restore security... They are here to stay quite a long time and they need to understand at least fundamentals of foreign languages and cultures, political imbroglio, different social and economic systems. In many regions, civilian organizations can not be sent on their mission due to threats and insecurity. NGO’s employees are regularly kidnapped or killed so that soldiers fight asymmetric opponents and, in the same time, distribute food, vaccinate people, rebuild roads, bridges or schools ... During this post-war period, with (or instead of) governmental and non governmental organizations, armed forces are asked to restore a peaceful living environment, prepare implementation of political institutions and make economic recovery easier.(Rathmell 2005)

**CI and public management**

For a long time, French Armed forces have been living by their own. Thanks to conscription, they had at their disposal an abundant supply of very cheap and qualified workforce. Conscripts were completing various tasks, from maintenance to bakery, teaching to software design. Military institution was quite focused on its own needs.

Since the beginning of the 21st century, conscription has been suspended and all volunteer force has been established. In this new model of organization, the first buzzwords coined in headquarters and regiments are “reengineering”, “rightsizing” (or in fact “downsizing”), “core competencies”, “outsourcing”, “public private partnership”… Experts’ surveys as well as everyday chit chats are full of references to “change”, “adaptability”, “savings”, “performance” or “audit”.

By reference to Williamson’s transaction cost theory, Armed forces are quickly shifting from a hierarchical model of governance to a more market oriented one. According to the theory, bureaucratic costs should diminish but Armed forces will not ipso facto benefit from budgetary savings.(Danet 2002b) To achieve significant savings, Armed forces have to improve their competencies in such functions as purchasing and procurement operations, contracts negotiation and enforcement, networking management… The army-like system relied on a clear chain of command in which officers were given a narrow span of management and formal authority to command and control subordinates; information were circulating bottom up while orders were moving tom down. In an all volunteer force, army moves away from the past vertical
integration towards a nimbler organization, fitted into a complex network of commercial and industrial relationships and relying on civil companies to achieve its missions. (Danet 2002a) Organization is constantly under a double threat: first, paying a lot for a poor or an ordinary provision of a service; second, contracting with a non reliable business partner. In the first case, Armed forces will benefit from no budgetary savings; in the second, the mission will be compromised.(Camm & Greenfield 2005; Congress of the United States - Congressional Budget Office 2008; Singer 2007)

Both threats can be reduced if a business intelligence strategy is implemented. Like every companies in the world, Army has to improve its supply chain and production management in order to create networks and processes for matching its demand with external supply at a lower cost, turning it into a value chain for every stakeholder and enforcing reliability of the whole network. However, improving efficiency of the supply and production chain implies to overcome many obstacles. An open information and management system connects various partners so as to harmonize opposite interests and to make a seamless network in which security procedures protect strategic data while enabling partners to exchange sensitive data required for price and quality negotiation. Moving from a hierarchical producing organization towards a networking leadership also requires keeping expertise in contracted out operations.(Fréry & Law-Kheng 2007)

A knowledge management system has to be implemented.(Jermol et coll. 2003) It implies the setting up of a proper infrastructure to facilitate capitalisation, upgrade and exchange of knowledge and ideas.

In brief, moving from conscription to the all volunteer force questioned the nature of prior management habits. It reminds Armed forces of the fundamentals of “ordinary” management. There is no doubt that business intelligence can provide them an efficient strategic planning tool.

**Conclusion**

Saint-Cyr is shaping Army’s officers for the 21st Century. To do so, it is the duty of military and academic staff to overhaul curriculums at regular intervals. Emphasis must be placed on contemporary and future military issues. “New wars”, “new missions” and “new organizational structure” demand new skills and competencies. Business intelligence is not the panacea to every ill of a turbulent military environment. But, business intelligence is probably one of the most relevant strategic planning toolset in such eventful situation. Taking courses in business intelligence may become a “must” in French cadets education.

**References**


Strategic Dependence of a Developing Country

Vision from Patents

Henri Dou*, Jean Marie Dou Jr**, Sri Damayanty Manullang***

*ESCEM Atelis, 1 rue Léo Delibes BP 0535, 37205 Cedex 3, France
douhenri@yahoo.fr

**CCIMP Chamber of Commerce and Industry of Marseille-Provence
jeanmariedou@yahoo.com

***Center for Competitive Intelligence. Regional network, North Sulawesi, Indonesia
srimanullang@hotmail.com

Abstract:
Patents are a unique source of technical information and they make a bridge between science and technology. Most of the time they are used to protect an invention and to develop innovative thinking. But the analysis of large groups of patents (from a specific technology or from a specific country) may also be used to develop strategic indicators. In this paper we wish to show how the analysis of the priority patents and extended patents (to a specific country) may give rise to strategic dependence indicators. As an example the case of Indonesia is analyzed. It is show that in various areas, the ratio of extended patents from foreign countries to Indonesia is large and the patents with a priority in Indonesia and coming from Indonesian firms is small. From these results different indicators are built and various considerations on the information policy of the country are made.

Keywords: competitive intelligence, patents, automatic patent analysis, strategic dependence, matheo-patent.
In Competitive Intelligence the strategic dependence of a country in key technological fields is of primary importance [Dou 2008]. In this paper we which to show how patents can be used as an indicator of technological dependence. The use of patents as industrial and economical indicators as been presented in various studies [Wanise 2003] [Zoltan 2002]. We wish in this article to use the APA (Automatic Patent Analysis) to develop a more realistic Dependence Indicator [Ishtiaq 2003] that the simple usage of counting patents per million of inhabitants, etc. We choose as case study the Indonesia. This is a developing country which is ready to launch a national program of Competitive Intelligence. In such a program the control of the scientific, economic and industrial information is important but out of it simple and efficient indicators could be build up. Various preliminary studies already made for this country will facilitate the integration of such indicators in its industrial development [Dou 2003] and also in the field of Competitive Intelligence [Dou 2004] education. Within the framework of this article, we made a study on the basis of patents available through the Esp@cenet worldwide database from the European Patent Office (EPO). The search of the patents, their downloading, their automatic analysis were carried out via the software Matheo Patent. Various publications were carried out within this framework and can be consulted is more information is necessary [Paoli 2003] [Dou 2004].

1 - Methodology

The figure 1, will present the global methodology that we followed. From the Esp@cenet worldwide database we retrieved the Patents with an Indonesian priority. An analysis of the IPC (4 digits) as well as the ratio of the total amount of patents from Indonesian firms in each IPC indicated the strategic areas. A second step was to extract from the Esp@cenet worldwide database for each of the above IPC, the patents extended to Indonesia by firms other than the Indonesian firms. From the amount of extended patents compared to the patents with an Indonesian priority (from Indonesian firms or from foreign firms) various strategic indicators were built.

![Diagram](image)

**Figure 1 - General methodology**

### 1.1 - Patents with an Indonesian Priority

A certain number of Indonesian patents are accessible via the worldwide database Esp@cenet. These patents can be divided into two categories: those which have an Indonesian priority and those which are extended to Indonesia (i.e. already granted in other countries). One can by querying the database builds up a first group of patents having an Indonesia priority (ID field (Indonesia) in the PR field (Priority)). The International Patent Classification (IPC) makes it possible to structure the patent areas in technological fields, applications and products. This research leads to the following result:

At March 10th 2004

Priority Indonesia total 1655 patents

Total Applicants (Patent Assignees): 511

Indonesia Applicants: 248

One can analyzes the IPC (International Patent Classification) present in this whole group of patents and for each class one can highlight the number of patents with an Indonesian priority. Figure 1 shows the analysis which can be carried. The following figures show the presentation of the main IPC, with access to the definition of the class, the patents of the class and their bibliographic information.

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2 For more information on the database, Esp@cenet, consult the following Internet host:

http://ep.espacenet.com/search97cgi/s97_cgi.exe?Action=FormGen&Template=ep/EN/home.htm

3 Matheo Patent. To obtain the characteristics of this software, as well as a version of free demonstration, consult the site: http://www.imcsline.com
After selection of one class, the number of patents present in the class is determined. Then the Indonesian Applicants are counted and compared with the total number of Applicants for this class.

Example:

**A 01 N**

Patents with ID (Indonesia) priority: 28 patents from Indonesian firms 4 patents ratio 14.3%

This methodology was applied to the 41 most significant IPC that we selected starting from the patents having an Indonesian priority. It is obvious also that the quality of the invention is not taken into account and we make only a statistical study. Another way to deal with the problem is to consider the patent family (patents related to the same invention and granted in different countries). There are 31 different families, which characterized 31 different inventions. The families are made from 2 to 8 patents. But, working with families is a more specialized field and to design indicators understandable by everybody, we preferred to take the global amount of patents.

2 - Selection of the strategic technologies and applications

Let us recall that we select these areas starting from the patents having an Indonesian priority and with a number of patents coming from significant Indonesian industries or Institutions. This selection can be worked out in two ways: important number of Indonesian Applicants, or important ratio of Indonesian Applicants compared to all Applicants in this
technology. We classified the strategic IPC by decreasing order according to the total number of patents granted to Indonesian Firms or Institutions and having a priority in Indonesia. One leads to the following classification:\(^4\)

**A 61 K** PREPARATIONS FOR MEDICAL, DENTAL, OR TOILET PURPOSES

Patents with ID priority: 102 from Indonesian firms 14 ratio 13,72%

Application number ID : 1669 ratio 6,11%

**H 04 L** TRANSMISSION OF DIGITAL INFORMATION, e.g. TELEGRAPHIC COMMUNICATION

Patents with ID priority: 23 from Indonesian firms 14 ratio 60,86%

Application number ID : 154 ratio 14,93%

**C 05 F** ORGANIC FERTILISERS NOT COVERED BY SUBCLASSES e.g. FERTILISERS FROM WASTE OR REFUSE

Patents with ID priority: 15 from Indonesian firms 13 ratio 86,66%

Application number ID : 11 ratio 136%

**C 02 F** TREATMENT OF WATER, WASTE WATER, SEWAGE, OR SLUDGE

Patents with ID priority: 23 from Indonesian firms 12 ratio 52,17%

Application number ID : 91 ratio 25,27%

**E 02 D** FOUNDATIONS; EXCAVATIONS; EMBANKMENTS; UNDERGROUND OR UNDERWATER STRUCTURES

Patents with ID priority: 19 from Indonesian firms 10 ratio 52,63%

Application number ID : 33 ratio 57,57%

**E 04 B** GENERAL BUILDING CONSTRUCTIONS; WALLS, e.g. PARTITIONS; ROOFS; FLOORS; CEILINGS; INSULATION OR OTHER PROTECTION OF BUILDINGS

Patents with ID priority: 19 from Indonesian firms 10 ratio 52,63%

Application number ID : 39 ratio 48,71%

**H 04 Q** SELECTING (switches, relays, selectors H01H; electronic switches H03K 17/00)

Patents with ID priority: 14 from Indonesian firms 9 ratio 64,28%

Application number ID : 158 ratio 8,86%

**H 04 N** PICTORIAL COMMUNICATION, e.g. TELEVISION

Patents with ID priority: 17 from Indonesian firms 8 ratio 47,05%

Application number ID : 214 ratio 7,94%

**B 65 D** CONTAINERS FOR STORAGE OR TRANSPORT OF ARTICLES OR MATERIALS, e.g. BAGS, BARRELS, BOTTLES, BOXES, CANS, CARTONS, CRATES, DRUMS, JARS, TANKS, HOPPERS, FORWARDING CONTAINERS; ACCESSORIES, CLOSURES, OR FITTINGS THEREFOR; PACKAGING ELEMENTS; PACKAGES

Patents with ID priority: 36 from Indonesian firms 7 ratio 19,44%

Application number ID : 249 ratio 14,45%

**R 01 D** SEPARATION

Patents with ID priority: 32 from Indonesian firms 6 ratio 18,75%

Application number ID : 288 ratio 11,11%

**F 02 M** SUPPLYING COMBUSTION ENGINES IN

Patents with ID priority: 13 from Indonesian firms 6 ratio 46,15%

Application number ID : 23 ratio 56,52%

**A 47 B** TABLES; DESKS; OFFICE FURNITURE; CABINETS; DRAWERS; GENERAL DETAILS OF FURNITURE

Patents with ID priority: 10 from Indonesian firms 5 ratio 50%

Application number ID : 11 ratio 90,90%

**C 08 L** COMPOSITIONS OF MACROMOLECULAR COMPOUNDS

Patents with ID priority: 26 from Indonesian firms 5 ratio 0%

Application number ID : 265 ratio 9,81%

**E 04 F** FINISHING WORK ON BUILDINGS, e.g. STAIRS, FLOORS

Patents with ID priority: 11 from Indonesian firms 5 ratio 45,45%

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\(^4\) For legibility, the definition of IPC classes was reduced to the minimum. If the reader wants to know more details, it may consult: http://l2.espacenet.com/espacenet/ecla/index/index.htm
G 06 F  ELECTRIC DIGITAL DATA PROCESSING

Patents with ID priority: 17 from Indonesian firms 5 ratio 29,41%
Application number ID : 157 ratio 10,82%

G 11 B  INFORMATION STORAGE BASED ON RELATIVE MOVEMENT BETWEEN RECORD CARRIER AND TRANSDUCER

Patents with ID priority: 18 from Indonesian firms 4 ratio 22,22%
Application number ID : 312 ratio 5,76%

A 01 N  PRESERVATION OF BODIES OF HUMANS OR ANIMALS OR PLANTS OR PARTS THEREOF; BIOCIDES, e.g. AS DISINFECTANTS, AS PESTICIDES, AS HERBICIDES

Patents with ID priority: 28 from Indonesian firms 4 ratio 14,3%
Application number ID : 317 ratio 8,83%

D 21 H  PULP COMPOSITIONS; PREPARATION THEREOF NOT COVERED BY SUBCLASSES D21C, D21D; IMPREGNATING OR COATING OF PAPER; TREATMENT OF FINISHED PAPER NOT COVERED BY CLASS B31 OR SUBCLASS D21G; PAPER NOT OTHERWISE PROVIDED FOR

Patents with ID priority: 15 from Indonesian firms 4 ratio 26,66%
Application number ID : 136 ratio 11,02%

A 43 B  CHARACTERISTIC FEATURES OF FOOTWEAR; PARTS OF FOOTWEAR

Patents with ID priority: 10 from Indonesian firms 4 ratio 40%
Application number ID : 33 ratio 30,30%

C 01 B  NON-METALLIC ELEMENTS; COMPOUNDS THEREOF

Patents with ID priority: 22 from Indonesian firms 4 ratio 18,18%
Application number ID : 166 ratio 13,25%

B 01 J  CHEMICAL OR PHYSICAL PROCESSES, e.g. CATALYSIS, COLLOID CHEMISTRY; THEIR RELEVANT APPARATUS

Patents with ID priority: 31 from Indonesian firms 3 ratio 9,67%
Application number ID : 401 ratio 7,73%

E 21 B  EARTH OR ROCK DRILLING; OBTAINING OIL, GAS, WATER, SOLUBLE OR MELTABLE MATERIALS OR A SLURRY OF MINERALS FROM WELLS

Patents with ID priority: 12 from Indonesian firms 3 ratio 25%
Application number ID : 164 ratio 7,31%

C 04 B  LIME; MAGNESIA; SLAG; CEMENTS; COMPOSITIONS THEREOF, e.g. MORTARS, CONCRETE OR LIKE BUILDING MATERIALS; ARTIFICIAL STONE; CERAMICS (devitrified glass-ceramics C03C 10/00); REFRACTORIES; TREATMENT OF NATURAL STONE

Patents with ID priority: 13 from Indonesian firms 3 ratio 23,07%
Application number ID : 91 ratio 14,28%

G 02 B  OPTICAL ELEMENTS, SYSTEMS, OR APPARATUS

Patents with ID priority: 10 from Indonesian firms 3 ratio 30%
Application number ID : 105 ratio 9,52%

C 07 C  ACYCLIC OR CARBOCYCLIC COMPOUNDS

Patents with ID priority: 48 from Indonesian firms 3 ratio 6,25%
Application number ID : 837 ratio 5,73%

C 09 D  COATING COMPOSITIONS, e.g. PAINTS, VARNISHES, LACQUERS; FILLING PASTES; CHEMICAL PAINT OR INK REMOvers; INKS; CORRECTING FLUIDS; WOODSTAINS; PASTES OR SOLIDS FOR COLOURING OR PRINTING; USE OF MATERIALS THEREFOR

Patents with ID priority: 15 from Indonesian firms 3 ratio 20%
Application number ID : 122 ratio 12,29%

C 12 N  MICRO-ORGANISMS OR ENZYMES; COMPOSITIONS THEREOF PROPAGATING, PRESERVING, OR MAINTAINING MICRO OR GENETIC ENGINEERING; CULTURE MEDIA

Patents with ID priority: 24 from Indonesian firms 2 ratio 8,33%
Application number ID : 268 ratio 8,95%

F 24 F  AIR-CONDITIONING; AIR-HUMIDIFICATION;
VENTILATION; USE OF AIR CURRENTS FOR SCREENING
Patents with ID priority: 14 from Indonesian firms 2 ratio 14,28%
Application number ID : 71 ratio 19,71%

H 01 H ELECTRIC SWITCHES; RELAYS; SELECTORS; EMERGENCY PROTECTIVE DEVICES
Patents with ID priority: 16 from Indonesian firms 2 ratio 12,50%
Application number ID : 94 ratio 17,02%

H 01 M PROCESSES OR MEANS, e.g. BATTERIES, FOR THE DIRECT CONVERSION OF CHEMICAL ENERGY INTO ELECTRICAL ENERGY
Patents with ID priority: 23 from Indonesian firms 2 ratio 8,69%
Application number ID : 105 ratio 21,90%

H 04 B TRANSMISSION
Patents with ID priority: 10 from Indonesian firms 1 ratio 10%
Application number ID : 208 ratio 4,80%

A 61 F FILTERS IMPLANTABLE INTO BLOOD VESSELS; PROSTHESES; ORTHOPAEDIC, NURSING OR CONTRACEPTIVE DEVICES; FOMENTATION; TREATMENT OR PROTECTION OF EYES OR EARS; BANDAGES, DRESSINGS OR ABSORBENT PADS; FIRST-AID KITS
Patents with ID priority: 17 from Indonesian firms 1 ratio 5,88%
Application number ID : 326 ratio 5,21%

C 08 G MACROMOLECULAR COMPOUNDS OBTAINED OTHERWISE THAN BY REACTIONS ONLY INVOLVING CARBON-TO-CARBON UNSATURATED BONDS
Patents with ID priority: 18 from Indonesian firms 1 ratio 5,55%
Application number ID : 267 ratio 6,74%

A 61 M DEVICES FOR INTRODUCING MEDIA INTO, OR ONTO, THE BODY; DEVICES FOR TRANSDUCING BODY MEDIA OR FOR TAKING MEDIA FROM THE BODY; DEVICES FOR PRODUCING OR ENDING SLEEP OR STUPOR
Patents with ID priority: 11 from Indonesian firms 1 ratio 9,09%
Application number ID : 51 ratio 21,56

C 08 J MACROMOLECULAR COMPOUNDS OBTAINED BY REACTIONS ONLY INVOLVING CARBON-TO-CARBON UNSATURATED BONDS
Patents with ID priority: 18 from Indonesian firms 0 ratio 0%
Application number ID : 363 ratio 4,95%

C 07 K USE OF INORGANIC OR NON-MACROMOLECULAR ORGANIC SUBSTANCES AS COMPOUNDING INGREDIENTS
Patents with ID priority: 11 from Indonesian firms 0 ratio 0%
Application number ID : 119 ratio 9,24%
From this list, various interpretations can be carried out, the classification by decreasing order of the number of patents of the Indonesian firms or Institutions, but also the ration of "genuine" Indonesian patents compared to the total number of patents having an Indonesian priority. It is noted, that except for the IPC A61K, the agreement between the number of "genuine" Indonesian patents and the preceding ratio is concordant.

3 - The strategic Dependence

The dependence will be measured according to the number of patents extended to Indonesia for each of the preceding classes. The search of the worldwide database (Esp@cenet) is made in the following way: presence of the term ID (Indonesia) in the field Application Number, then association with the one selected IPC (4 digits) presents in IPC field. To avoid reformulating the same list, we will indicate in gray, the fields where the strategic dependence is the strongest.

On a technical point of view, the extension on Indonesia works on the following way:

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5 This is a very important point, specially with in view the development of a National Indonesian Institute of Competitive Intelligence. For more information see http://www.ciworlwide.org
Figure 3 - Selection of all the patents extended to Indonesia, for the IPC H04L

Example of patent ID 28086

Figure 4 - This patent belongs to a family of patents the priority is French
The extension to Indonesia is made through the World Patent W09956435
The use of the families of patents conducts to the same remarks than for the group of patents with Indonesian priority.

**Example of dependence:**
The second line of data is considered:
(under the line in bold characters)

**C 07 D**  HETEROCYCLIC COMPOUNDS

Patents with ID priority: 51 patents, from Indonesian firms 0 ratio 0%
Application number ID : 1158 brevets ratio 4.40%
Application number ID (Indonesia): 1158 patents, ratio of priority patents to extended patents: 4.40%. Thus in this field the strategic dependence is very strong

**H 04 L**  TRANSMISSION OF DIGITAL INFORMATION, e.g. TELEGRAPHIC COMMUNICATION

Patents with ID priority: 23 from Indonesian firms 14 ratio 60.86%
Application number ID : 154 ratio 14.93%
Application number ID (Indonesia): 166 patents, ratio of priority patents\(^6\) to extended patents\(^7\): 13.85%. The degree of dependence is smaller than the former one.

To made these comparison necessitated to retrieve 9227 Patents extended to Indonesia. This makes with the 1655 patents with an Indonesian priority, 10.882 patents which have been retrieved. We saw that not all the years are present in this Esp@acenet worldwide database, but this sample is in our opinion representative enough to conduct the present study. How course, if a database from Indonesian Patents issue from Indonesia were available online a more detailed study could be done. But, in the present state of Indonesian’s information systems this is far away to be the case.

That result raises various questions in the field of industrial protection for a Developing country. What must be protected? Is this protection significant for

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\(^6\) Another way is to take into account only the Indonesian patents with an Indonesian priority. We did not take this possibility, thinking that if a firm take a patent with an Indonesian priority this firm will directly participate to the development of the country.

\(^7\) The extended patents are only foreign patents. The Indonesia patents present have been cut off

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In addition, in the field of the general policy of a National Competitive Intelligence, it is necessary in our opinion to raise the following questions:

- why in certain fields the extensions in Indonesia are so important?
- do these patents (not Indonesian) threaten the technological independence of the Country?
- if so, what could be done?
- how while working under licensing one can transfer as soon as possible the technology to make it evolves in an endogenous way for the country?

**4 - Institutions and firms with Indonesia priority or extension:**

It is easy with Matheo Patent to class the patents with an Indonesia priority by Applicants.
The following figure shows how we can browse through the list to detect the Indonesian Applicants. The same can be made for the patents extended to Indonesia.

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\(^8\) It is obvious that there can be a brilliant invention, being able to be extended to the whole world. Here we place ourselves on the statistical level only.
Figure 5 - Main Indonesian firms with priority patents in Indonesia

Figure 6 - Main Firms with extended patents in Indonesia
For IPC A61

A 61 K  PREPARATIONS FOR MEDICAL, DENTAL, OR TOILET PURPOSES

Patents with ID priority: 102  from Indonesian firms 14  ratio 13.72%
5 - Other correlations

Three main networks are noticeable: one around IPC A61K, the other with IPC B01D, and the last around G02B, this is the network of PT Telekomunikasi Indonesia and ITB (the Bandung electronic valley). In this last case, PT Telekomunikasi was with and without ID at the end. This was corrected in the graph. The two adjacent square boxes are IPC and their frequencies, the figure in the circles represent the frequencies of the links.

6 Conclusion

Even if the number of Patents with only an Indonesian priority is limited in the worldwide Esp@cenet database, the patents with an extended priority to Indonesia are still currently available. From the trend of these patent deposits an interesting mapping of technologies and firms can still be made. The Internet availability of the worldwide Esp@cenet database on a free base, is a strong argument to develop out of this resource a national policy of patent indicators.

This is particularly significant, because one will associate to the concept of protection another concept: the use of the patents like a "think tank" to stimulate the innovation [Dugosh 2000]. One can thus sensitize the decision makers and show to the researchers how to focus their work on strategic technologies useful for the country development and finally to break the barrier often met: "one cannot use information on line because it is too expensive".

Figure 7 - Network of main IPC and Firms (Frequency >= 8) with Indonesian priority
These methods starting from real data allow to develop indicators, which can be used to avoid in certain countries the internal or external exoduses 9 specially when students are going abroad to make a PhD, or when they are back home and develop research projects. In the same frame of mind, a research project in R&D should be analyzed and test within the framework of the patents extended to Indonesia. If the field of the proposal is covered by a large number of foreign patents the question of the usefulness of the research should be asked.

The last remark, but one of the most important, is that this type of study and set of indicators underline how it is important for a country to create one or several databases of national scientific and technical production. The patent database is part of this policy but scientific and technical competencies of people10 as well as their scientific production are also very important.

7 References

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Henri Dou and Sri Manullang, Uses of scientific indicators within the framework of the development of Indonesian Provinces, ISDM (Information Science for Decision Making), April 2003, article n° 65. To reach the complete text of the article http://www.isdm.org


Zoltan J Acsa, Luc Anselin B, Attila Varga, Obvious and innovation counts have measures of regional production of new knowledge, Research Policy, 31 (2002) 1069 – 1085

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9 One calls internal exodus, the return of a researcher who imports in his country a research whose topic is not relevant for the development of his country. By external exodus, one qualify a research made abroad and without relationship with the needs of the country of origin of the researcher.

10 See the Brazilian database of national scientific and technical competencies: Lattes http://lattes.cnpq.br/
Causes of Competitive Analysis Failure: Understanding and Responding to Problems at the Individual Level

Dr Craig S. Fleisher
Windsor Research Leadership Chair and Professor of Management
Odette School of Business
University of Windsor
Canada
E-mail: fleisher@uwindsor.ca

Sheila Wright
Reader in Competitive Intelligence & Marketing Strategy
Leicester Business School
De Montfort University
United Kingdom
E-mail: sheila.wright@dmu.ac.uk

Abstract
It ought to be a fairly safe assumption that a CI analyst would want to perform the analysis task and execute their responsibilities successfully over time. Such competencies should come with added experience on the job, as should the ability to reduce the risk of failure by diagnosing potential pitfalls. This paper presents a) a unique four-level hierarchical model of analysis failure, b) ten key continua of competitive analysis skills which we believe an analyst has to master before they can consider themselves to be truly competent in their work, c) a discussion on the paucity of high quality teaching of these skills, and d) presents eight guiding principles which a firm should consider in an attempt to improve individual performance and reduce the potential for analysis failure. Our purpose in identifying the possibility and causes of analytical failure is that we believe much can be learned by managers and practitioners from studying failures. This learning can ultimately contribute towards creating a more successful analysis function which can only be beneficial to all concerned.

Keywords: Competitive Analysis Failure, Hierarchical Model, Individual Insight, Analyst Skills.
Introduction

It hardly needs to be said that organizations and managers can learn from failures (Brown 2007) but it requires individuals to thoughtfully talk about and examine them, something which is rarely done except in cases of catastrophic, publicly visible failures (Edmonson & Cannon, 2005). Although analysis of failure is an accepted part of contemporary manufacturing industry practice, its application to an enterprise’s intelligence, planning and decision-making functions is less common (Heuer 2005, Underwood 2006). In identifying the possibility and causes of analytical failure, we believe that much can be learned by managers and practitioners. The first task is to be aware of the location of failure.

Failure Location

We would regard the highest level of failure to be that of business failure, whereby a business is no longer able to continue as a viable commercial entity. If failure is defined as “discontinuance of business,” then it is likely that approximately two-thirds of all start-ups will fail within their first ten years (Watson & Everett, 1996) and at even higher rates in some particularly difficult sectors such as retailing and restaurants. Most of these business failures are commonly attributed to a general lack of effective planning and management skills exhibited by these firms’ executives.

Beneath the level of the firm, we encounter planning, decision-making and implementation failures and these are partly composed of intelligence failures. These can be further disaggregated into failures along the traditional intelligence cycle functions of planning, data collection, analysis, dissemination and communication (Chao & Ishii, 2003).

Intelligence failures are distinguishable from more task-oriented intelligence errors, which are viewed as factual inaccuracies in analysis resulting from poor or missing data. Intelligence failure is defined by Johnston (2005, p6) as “systemic organizational surprise resulting from incorrect, missing, discarded, or inadequate hypotheses.” These failures may be due, in part, to failed analysis, but they can also be caused by other factors that interact with the analysis process. Attempting to disentangle or disaggregate the analysis portion of the process from other related processes is never an easy or straightforward task. At a minimum, it is important that analysts and their decision-makers routinely carry out a post-mortem on projects to try and determine any areas for improvement.

Having suggested the need for post-task assessment of the analysis process, we recognize that there are a variety of problems associated with the evaluation of intelligence analysis and reporting that make this task more challenging. The range of cognitive biases impacting this process is outlined in greater depth by Heuer (1999). Briefly summarized, he notes that:

Analysts normally overestimate the accuracy of their past judgments.

Intelligence clients or consumers normally underestimate how much they learned from analysis products such as reports or briefs.

Overseers of intelligence production who conduct post-mortem analyses of an intelligence failure normally judge that events were more readily foreseeable than was in fact the case.

When analysis is ineffective, both the analyst and the decision-maker often don’t know in time and frequently cannot identify the root cause(s) of the errors, problems or failure. They must consider the following questions underlying the potential errors.

> Analysis problem definition

Was the analysis problem, the Key Intelligence Topic (KIT)/Key Intelligence Question (KIQ), properly specified at the outset? Did the analysis process allow for any subsequent redefinitions of the problem?
Analysis project planning
Did the analyst develop a project management plan or statement of work to perform the analysis process? Did they actually implement the process according to their plan or veer away from it mid-course?

Data gathering error
Was the appropriate data available to the analyst? If not, could the data have been efficiently acquired? Did the analyst properly account for data or information gaps? Was the analysis the cause of the failure or was data collection the primary cause?

Tool and technique-related error
Did the analyst use the best available tools, techniques and/or analysis methods? Were the right tools used, and in the right sequence?

Synthesis error
Did the analyst arrive at the optimal conclusion or insight? Did they “connect the dots” in a defensible manner? Would other experienced and successful analysts have connected them differently?

Communication transmission or channel error
Did the analyst communicate their insights to their decision-maker throughout the project in an optimal fashion? Was the analysis failure really a communication failure?

Communication reception error
Did the decision-maker have a complete and accurate understanding of the analyst’s conclusions before the decision needed to be made?

Unsystematic development error
Did events arise during the course of the process that derailed the analysis or analyst? What impact did unexplained variance or random factors have on the outcome of the analysis task? Having located the source, or sources, of error, only then is corrective action effective.

3 Four-Level Hierarchical Model of Analysis Failures
Whatever the reasons experienced for analysis failures, it is valuable to identify why these happen and this is represented in a four-level model for identifying the barriers to generating effective competitive analysis. These four levels, and the primary factors associated with each, are illustrated in Table 1.

Whilst each of these sections warrants a full discussion on its own, for the purposes of this paper, we will concentrate on the aspect which we believe can be most effectively influenced by the individual analyst. Some of these factors may be present in other categories and we recognise that there may be secondary or tertiary impact at other levels.

<table>
<thead>
<tr>
<th>Level</th>
<th>Nature of Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Analyst Level Failures</td>
<td>• Different natural analytical abilities</td>
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<tr>
<td></td>
<td>• Naturally limited mental capacities</td>
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<td></td>
<td>• Natural motivation</td>
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<td></td>
<td>• Cognitive biases and perceptual distortion</td>
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<td></td>
<td>• Insufficient understanding and application of analysis tools and techniques</td>
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<tr>
<td>Analysis Task Level Failures</td>
<td>• Part of larger task</td>
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<td></td>
<td>• Task discontinuity</td>
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<td></td>
<td>• Unsatisfactory data inputs</td>
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<td></td>
<td>• Disconnects from decision making</td>
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<tr>
<td></td>
<td>• Imbalance among key task facets</td>
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<tr>
<td>Internal Organizational Level Failures</td>
<td>• Some decision makers don’t understand and appreciate analysis</td>
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<td></td>
<td>• Clients cannot specify their critical intelligence needs or questions</td>
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<td></td>
<td>• Under-resourcing the analysis function</td>
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<td>• Lack of analysis-specific IT support</td>
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<td></td>
<td>• Lack of thinking time</td>
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<td></td>
<td>• Organizational culture and politics</td>
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<td></td>
<td>• Time and trust</td>
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<td></td>
<td>• Invisibility and mystery</td>
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<td></td>
<td>• Misconception that everyone can do analysis</td>
</tr>
<tr>
<td>External Environment Level Failures</td>
<td>• Growing range of competitive factors</td>
</tr>
<tr>
<td></td>
<td>• Complexity and turbulence</td>
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<td></td>
<td>• Data overload</td>
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<tr>
<td></td>
<td>• Globalization</td>
</tr>
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<td></td>
<td>• Educational deficiencies</td>
</tr>
</tbody>
</table>

Table 1
Four-Level Hierarchical Model of Analysis Failures

4 Causes of Failure at Individual Analyst Level
The competitive analysis task is fundamentally performed by individuals, although they will also cooperate and collaborate with others to get their tasks accomplished. From consulting and
educational assignments, we have observed the following hindrance factors as being primarily present at the level of the individual analyst.

4.1 Different natural analytical abilities
People rely on a limited set of mental models, have preconceptions on issues, and exhibit a wide range of cognitive bias when reviewing information. People also think differently. Some, in a right-brained linear fashion, others in a left-brained lateral fashion. This is important when viewed in light of analysis being a mixture of both scientific and non-scientific techniques.

4.2 Naturally limited mental capacities
The content and context facing most analysts has become more complicated, complex, and fast moving in recent years. Having said that, our brain’s natural abilities to effectively process additional information hasn’t evolved to match this. The popular view that we only use 10% of our brain’s ability is a well-worn myth, and one could argue with the figure, but we are confident that human beings still only use a limited percentage of their brain capacity, although scientific record still does not have a sense of what that percentage might be (Kalat, 1998).

In his influential article, Miller (1956) suggested that the magical number describing our natural information processing capabilities is seven things at one time plus or minus two. This could be a major problem for analysts who often have a far higher number of issues to keep in their mental calculus at any one time. Although we now have better information technology systems to assist in the analysis task, we still have to use our brains in exactly the same way as we have always done.

4.3 Natural motivation
Given a choice between a more difficult or a less difficult task with identical outcomes, the majority of people would opt for the easier task. As we hope is already patently obvious by now, analysis is not an easy task and can require the use, or expenditure of, significant levels of cognitive, intellectual, organizational, and social resources to achieve optimum performance. One reason it is so difficult is because we have far fewer published heuristics or “rules of thumb” to use in performing analysis than we do in many other fields of organizational endeavor such as engineering, scientific research, accounting, process management, sales and marketing. Some analysts think that volume is the answer, not value. This form of sufficing behavior is unlikely to meet the needs of today’s demanding decision-making clients.

4.4 Cognitive biases and perceptual distortion
In spite of the presence of the broad range of analytical techniques, some organizations still adopt poor strategies and their decision-making processes are vulnerable to individual cognitive biases or “groupthink.” Researchers have identified a variety of common cognitive biases that can enter into an individual's or groups' process of analysis (Bazerman, 2002; Kahneman et al, 1982; Sawyer, 1999; Tversky and Kahneman, 1986). These are identified in Table 2.

<table>
<thead>
<tr>
<th>Elements</th>
<th>Nature of Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimation Bias</td>
<td>Over or under estimation of the magnitude of the effect of future events</td>
</tr>
<tr>
<td>Escalating Commitment</td>
<td>Continual commitment of time, effort and finance to support a failing project, even when there is evidence that it is a fruitless task</td>
</tr>
<tr>
<td>Group-think</td>
<td>Lack of pertinent questioning of underlying assumptions and an unwillingness to challenge entrenched leadership, engrained cultures and senior executives</td>
</tr>
<tr>
<td>Illusion of Control</td>
<td>An individual’s misplaced confidence in their ability to control and immunity to error. Illusion and group-think are common bed-fellows</td>
</tr>
<tr>
<td>Prior Hypothesis Bias</td>
<td>Individuals prone to this bias use data only when it confirms their beliefs, even when</td>
</tr>
</tbody>
</table>
presented with contradictory analytical evidence

<table>
<thead>
<tr>
<th>Reasoning by Analogy</th>
<th>Individuals use simple analogies to make sense of challenging problems. Oversimplifying complex problems can lead to detrimental judgment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Representativeness</td>
<td>The error of extrapolating data from small samples to explain larger phenomena. Inexperienced analysts find it hard to distinguish between apparent and real facts</td>
</tr>
</tbody>
</table>

Table 2
Cognitive Bias Elements

The existence of cognitive biases and groupthink raises issues of how to bring critical intelligence to bear on organizational decision-making mechanisms so that the decisions made are realistic. It is important to understand the range of motives behind it. Feldman and March (1981) pointed out that people in organizations often tend to collect more information than strictly necessary for decision making, partly to influence others and partly to be viewed as thorough in their work. In other words, analysis is often used not just for objective decision-making but also for political or symbolic purposes.

Studies on the use of analysis tools and techniques have consistently demonstrated that the individuals responsible will use only a very limited set of tools and techniques, usually those they know the best and have previously applied with some perceived success (Gib and Gooding, 1998; Rigby, 2001, Rigby 2003, 2009). This has also been identified as “tool rut” (Fleisher & Bensoussan, 2007). Even when an analyst is willing to use an enlarged tool box and attempt tools and techniques outside their ordinary fare, they often lack the knowledge, understanding and experience to do it well. It is no surprise therefore, that they will stick to the safe but well worn path of familiarity (Self, 2003, Marteniuk (2003, Morecroft, 2006, Swanson, 2007).

There is also a misconception that everyone can do analysis. Ask a business graduate whether they developed good analytical skills in their programme and you will almost always get an affirmative answer, yet few recognize the differences between the process of analysis and the ability to think. Analysis requires a unique and differentiated form of pragmatic thinking. Most individuals have neither been formally trained, nor have the natural ability, to perform this type of activity. Although there has been a natural and healthy evolution of offerings available to those wishing to receive formal analysis instruction (Fleisher & Bensoussan 2003; 2007), few educational developments in this area have been positive, due in part, to the lack of experienced faculty staff and ambiguity of scope.

5 Developing Intelligence Insight

There is a long-standing debate about whether analysis is actually a craft, a discipline, a field, or a profession (Johnston, 2005, Marrin & Clemente, 2005, Fleisher, 2003, Davis, 2002). Much of this debate centres on how a competitive analyst has to balance the need to be creative with the need to employ documented methods in their effort to produce good output (Pawelski, 2006, Fleisher & Bensoussan, 2007). Although these two “art” and “science” elements are not necessarily diametrically opposed, they are generally perceived as two ends of a single continuum (Johnston, 2005).

The potential for the teaching of critical and intuitive analysis has been debated in the arena of business ethics (Griseri, 2002, Locke, 2006, Burton et al, 2006), multiculturalism (El-Hani & Mortimer 2007, Kim, 2006), technology/science (Davies, 2003) and popular culture (Snævarr, 2007). A recent conceptual paper by Clark et al, (2006) identified scope within the marketing curriculum and Herrmann (2005) spoke of the need for scholars and practitioners to conceive “new dominant paradigms in strategic management that revolve around the concepts of knowledge, learning and innovation”. Miller &
Ireland (2005) agreed that “intuition has not been subjected to sufficient review”.

In the higher and executive education system there is little evidence that teaching the skill of pragmatism and realism is taken seriously, albeit such a skill set is lauded as a distinct competitive advantage for an individual in their career (Fleisher, 2004, Dacko 2006). In their review of marketing curricula, Evans et al (2002) concluded that “many marketing graduates are not being well equipped for the ‘new marketing’. Dacko (2006) and Lynch (2007) also observed that unless graduates are able to master the broader range of "soft" skills (of which we would claim critical analysis is one), then their ability to apply their subject knowledge will be severely limited. Lynch (2007) also reported on research with employers which revealed that their requirements from graduates went well beyond the application of subject knowledge, and into the realms of intuition, creativity and common sense. In Figure 1 we outline ten continua which identify those skills which we believe a competitive analyst has to master before they can consider themselves to be truly competent in their work.

These continua have been developed not only from our research and experience of teaching competitive analysis, but also from discussions with a variety of practitioners of differing experience around the globe. A few elements of the ten continua will inevitably overlap, but the intention has been to establish those with lower degrees of redundancy and repetition. In order to carry out their work effectively, competitive analysts must be willing, able and competent at moving across the continuum to suit the situation to hand.

5.1 Creative ↔ Scientific
Competitive analysts need to be skilled in the application of both creative and scientific techniques. Good analysts will seek to combine differing intellectual patterns, which are reflected in the wider, often unique processes in any firm's decision making process (Clark, 2004). Experienced analysts develop the ability over time to know how to achieve the appropriate balance between the various elements, and approaches to the analytical task (Davis, 2002). Although recent efforts have sought to document and replicate the approaches, methods and skills need to properly perform this analysis (Davis, 2002), most experienced analysts recognize that creativity that comes out of first-time connections or techniques can also be a source of valuable insight. If all competitive analysis is done scientifically, then the development of artificial intelligence, computational algorithms, and solutions-generating software would already have become the norm, a situation that at least a few experts suggest would be debilitating for analysis and decision making in most organizations (Gilad, 1994, 2004; Fuld 2003).

5.2 Deduction ↔ Abduction ↔ Induction
This continuum examines the sequence of analysis arising between assumptions, facts, and conclusions. It is important because many analysts begin their tasks with a plethora of data and facts to assist them, while others lack them. It is also important in cases where analogies or benchmarks are readily available and those cases in which these items are lacking.

Deduction is the process of reasoning used by analysts whereby their conclusions follow from the stated premises (Clark, 2004). In other words, analysts deduct inferences by reasoning from the general to the specific. Deductive reasoning works best in so-called closed systems, which rarely exist in the competitive business arena. Nevertheless, as a critical mode of inquiry, it can be very useful in refuting specific hypotheses and helping the analyst arrive at more definitive estimates of the likelihood of prospective outcomes. Induction typically happens when an analyst is able to postulate causality amongst related phenomena. It can also
involve drawing out or analyzing assumptions or premises used in forming conclusions (Clark, 2004).

Abduction is the process of generating an original hypothesis to explain evidence that does not easily or readily offer a common explanation. Compared to inductive reasoning, abduction expands the number and set of hypotheses available for scrutiny to the analyst (Schum, 1987). Some experts have referred to this as the “a-ha” type of reasoning whereby the analyst generates responses in a spontaneous fashion and probably cannot consciously articulate the steps they used to arrive at their outcome (Schmidlin, 1993).

5.3 Individual ↔ Group ↔ Enterprise

Analysts work on tasks across three generic levels of their organizations, individual, group and enterprise. As in many problem solving and decision making endeavours, achieving success at all three levels involves more than just the additive burden of having to integrate more people into one’s task. Much of the analyst’s work is done at the individual level whereby they alone are responsible for the outputs. Analysts will commonly work in collaboration with others, with the final product being the result of a joint effort. In these cases, the individual effort is difficult to identify as it becomes entwined and develops as a result of the group process.

At the enterprise level, an analyst’s own group collaborators, and other groups within the enterprise will generate insights that are utilized by decision makers. This is the most complex process in an organization and as a consequence, it is more difficult for the individual effort to be identified. A large part of the analyst’s role is to consider and integrate the firm’s context into their analytical process. There is a paramount need for them to be cognisant of, and factor in, the social, political, historical, and cultural lenses through which their colleagues view the world (Fleisher & Bensoussan, 2007). At the same time, it is important that they do not over-play the role of such corporate norms, otherwise they will become paralyzed and ineffective (Langley, 1995).

5.4 Intuition ↔ Intellect

Similar but not the same as the creative-scientific continuum, this one suggests that analysts must employ their intuition, sometimes referred to as ‘immediate cognition’ or the “Eureka effect” (Cutting & Kouzmin, 2004). Intuition is inevitably influenced by past experience coupled with a natural proclivity to come to a judgment, often recognised as instinctive ways of knowing (Davis, 2002). Analysts will have a hunch or sense of something which they cannot readily express in writing. What makes intuition so important in an analytical context is that not only will the analyst use this to some degree in processing data, but the decision-maker will almost always use a similar skill in assessing the recommendations of the
analyst. Intuition is a prevailing power within the process.

The use of intellect is where the competitive analyst is operating in a well thought out, calculated and rational manner. Intellect is driven by a data gathering plan and a strategy which is subject to time, social and other performance pressures which can impair it.

Intellect and intuition may converge eventually, in an analyst’s recommendation, but the intellectual portion of their recommendation can be more easily communicated to recipients in the form of rules, concepts and/or techniques. Intuition is less tangible, less easy to prove and rationally, less easy to account for.

5.5 Precision ↔ Perspective

It is suggested that the majority of analysts will work in the broader context of the firm, rather than the more narrow and specific facets of precision. This is often analogized as the trade-off between seeing the “forest for the trees”. A decision-maker will not usually need to know the fact that a competitor earned precisely 34.5632 % of their total revenues from a product called “Shiny Hair To Go”, rather, the perspective view that they generated approximately one third of their revenues from one product line. In other words, answering the question, “thank you for the figures, but what does that actually mean?”

Whilst the perspective view can tend to be more valuable, this does not mean to say that there is any room for a lack of precision in coming to that view. It is all a matter of what is reported and how it is done. Competitive analysts should always seek to attain a reasonable level of precision without spending any more time than is necessary to produce a recommendation with an agreed level of confidence. This will change by project, by situation and by decision urgency.

5.6 Past ↔ Present ↔ Future

Analysts make trades-off between the direction of time in which both their data, and their recommendations, are pointing. Accounting data, competitor sales figures, information from financial statements and balance sheets, market share figures, and the like, are the result of action which have taken place in the past. This information is of value when operating in static and simple market conditions, where forecasting, trends analysis and chain ratios, based on past events, are common place (Hooley et al, 2008a, pp 177-190). In dynamic and complex markets, concept testing, scenarios, strategic planning, cross-impact analysis and expert opinion are required (Hooley et al, 2008b, 191-198). The simple collection and assimilation of past data is insufficient to assess the future.

Analysts also need to use leading indicators of present and future activity and factor these into their understanding of the evolving competitive environment. A skilled analyst knows that looking ahead is far more important than looking backwards. Reliance on past data alone only summarises what is already known, it does not necessarily predict the future.

Recommendations, propositions and judgements about the future are where competitive analysts earn their money and reputation. It is only then that they are earning their salary, providing value added analytical output for use in their firm.

5.7 Qualitative ↔ Quantitative

Qualitative analysis methods are those which are typically associated with interpretative approaches, rather than measuring discrete, observable events. Qualitative methods are most helpful in those areas that have been identified as potential weaknesses within the quantitative approach. The use of interviews and observations provide a deeper, rather than a broader, data about a particular phenomenon. These methods can be particularly valuable in helping to describe and explain the longitudinal evolution of competition and competitive behaviour (Johnston, 2005).
Quantitative methods are more commonly used to examine a context at a single point in time, they seek “distinguishing characteristics, elemental properties and empirical boundaries and tend to examine ‘how much’ or ‘how often’ certain phenomena occur” (Nau, 1995). The weaknesses of quantitative analytical process lie mainly in their failure to ascertain deeper underlying meanings and explanations of marketplace competition, even when they produce results that are significant, reliable and valid (Gilad, 2004).

Recent surveys of tools used in assisting decision making show that the majority of managers and companies tend to favour the use of quantitative methods (Rigby & Bilodeau, 2007), principally because they tend to produce results which can be replicated and are more easily disseminated. Quantitative analysis and results tend to be viewed as being more rigorous and free from interpretational bias (Davis, 2002), but it is also well understood that statistics are not always as “squeaky clean” as purported (Best 2001, Best 2004).

Effective analysts need to be able to apply and use both qualitative and quantitative methods and to be able to communicate both the results and the processes underlying their analysis. Without understanding from where, and how, their results were derived, as well as the trade-offs made in achieving them, they leave themselves open to criticism.

5.8 Automation ➔ Human Process

One aspect that every analyst must assess is the desire to automate their processes. Many business processes have benefited greatly from the 'systems' approach and it certainly has its place. Even a number of data gathering tasks that form the larger process of competitive intelligence, such as setting up targeted RSS feeds, automated “pushing” of competitors’ website changes, or media about competitors’ activities, have been productively automated (Vibert, 2001). Unfortunately, software developed to support the analytical process has, to date, not been impressive in performing or promoting effective analysis (Fuld, 2003).

No 'magic bullet' or 'plug-in' solution exists that can replace the ability of the human brain to understand, assimilate and assess the type of data that analysts regularly deal with, much less make sense of it. Whilst some automation may benefit the process, what automation can't yet carry out, and may never be able to do, is replicate the unique processes of strategic thinking that human beings can achieve. This is especially true when this thinking includes the application of creativity and intuition previously described.

5.9 Written/Spoken ➔ Visualisation

The issue of clearly communicating analytical processes and outcomes is ever-present. In volume terms, the written/spoken word is, arguably the most frequent form of delivery used. Unfortunately, not all spoken or written words are meaningful due to poor delivery, poor language skills and/or overuse of codes or acronyms which do not translate or travel across divisions or SBUs and, at times, an inappropriate context.

Visualisation on the other hand, allows analysts to share their ideas in graphic, illustrative, pictorial formats. Being able to ‘draw a picture’ of a situation, visually describe competitors or their likely behaviours and use metaphors to aid understanding is far more powerful, and memorable, to busy decision makers then a 35 page report of closely typed text and figures. The onus is on the MCS to make the story ‘live’, interpret their findings and provide a recommendation, rather than simply presenting the bare facts. Analysts also need to be aware of the preferences of their differing audiences and be able to develop the skills required to deliver to those needs.
5.10 Objectivity  Subjectivity
Nearly all tenets of analysis suggest that analysts must be objective, detached, dispassionate and unbiased in their work. This does not mean that individuals can, or should, surrender their personal views but the analysis process is often more akin to the social sciences than to pure science. Consequently, there will always be some degree of error present. Individuality by an analyst is highly desirable in the appropriate circumstances. Competitive analysts need to recognise when they are being objective and when they are not (Clark & Montgomery, 1996). This balance is difficult to achieve because few analysts are trained or coached to recognise their own biases and subjectivity.

Subjectivity in analysis requires the same justification as any other form of objective measure. It must be properly clarified so that decision makers can make their own judgement on the quality of the analysis and recommendations presented. The analyst should always enter an assignment with an open mind, try to see things through the perspective of their data gatherers and decision-makers as well as market competitors in order to be empathetic to better understanding their own preconceived notions.

6 Responding to Analysis Failure:
Eight Guiding Principles for the Firm
Effective analysts must know how to properly position their efforts and focus across the continuum over time. That is not to say that analysts always need to find the middle ground on each continuum. In fact, the middle ground may be exactly the wrong place to be. Rather, the analyst needs to determine where they should be on a project along each of the continua, and be able to adapt along each, as the project and its evolution demands.

There is however, a responsibility on the part of the firm to provide a suitable environment within which the analyst can carry out their work. One in which they can learn their craft, experiment, develop and hone their skills. It is the analyst who provided the intellectual input but it is the analysis process which determines success or otherwise. No matter how skilled the analyst, the decision making process, into which analytical output should inevitably be fed, will be significantly enhanced if the firm pays heed to these eight guiding principles.

6.1 Provide Empowerment
A common utterance in the intelligence community is that without intelligence, a decision-maker cannot take responsibility. With it, he or she cannot avoid taking responsibility. Clearly, the more that decision makers are equipped with insight, the better they will perform. This is why the importance of intelligence analysis needs to be recognized in its own right. Both analysts and executives need to promote the reality that analysis is critical to an organisation’s competitive success. Analysts and their internal customers should be comfortable with, and publicise to others, the real benefit which emanates from analysis. It is an evolving discipline in its own right and competitive analysts are skilled professionals, operating no differently than others in the firm.

6.2 Realize the Value of Analysis
Even if the benefits and value of the process cannot be easily quantified by existing performance measurement systems, executives need to realize that effective analysis cannot be achieved through “quick fixes” or by the introduction of new software or hardware applications. The value of analysis comes from the insight it provides decision-makers, which ultimately benefits their enterprise.

6.3 Value the Link between Analysis and Success
Providing managers with case studies and examples of good and bad analytical
outputs can help powerfully demonstrate this relationship between analysis quality and decision-making effectiveness. Using analysis insights will significantly lower the number of uncontrollable or perceived risks associated with decisions.

6.4 Ask the Right Questions
Consumers of analysis products should know what to ask for from analysts and be realistic in what they expect to receive. Executives and departmental managers, like many other employees within the organization, often misunderstand the true functions and proper operations of analysts or intelligence specialists. Decision makers often ask for the wrong information and will then have difficulty in making sense of the analytical products they receive. For the analyst, it is important that executives communicate just what is that will make a difference to their agenda, priorities, and needs as they perceive them. Only then will the analyst be able to provide products that are tailored not only to decision-makers’ specific information requirements but also presented in their language.

6.5 Measure Performance Appropriately
The competencies, skills and capabilities of an analyst can be measured, therefore, it can be both managed and improved. The development of capability measurement tools and metrics to demonstrate improvement should be strongly encouraged. There is also a need to measure analysis products and processes against benchmarks. Best practices in the analytic field should be studied, adapted and emulated.

6.6 Position the Analyst Correctly
It is vital that a competitive analyst is positioned where they can make a difference. Analysts need to be actively involved in the networks of information collectors and their clients, but also be given the time needed to properly do their work. Also, the longer that an analyst can focus their efforts on particular specialties needed by decision makers, the quicker they will move up the learning curve in terms of producing quality outputs.

As even the most effective analysts can provide inaccurate insight at times, decision-making clients need to give their analysts opportunities to fail and to demonstrate that they have learned from those experiences. This leads to the development of shared trust between an analyst and their decision-maker. With security and the trust of their clients, analysts are at their most effective.

6.7 Provision of the Right Tools
As with any other skilled worker, the analyst needs to have access to all the proper tools of their craft. Analytic applications, reliable data inputs, access to sources, time to think, advanced information and communication infrastructure, and so on. Analysts cannot be expected to provide insight without having access to rich sources of data, enabling technology, the open door of their organisational colleagues and clearly articulated KITs/KIQs. The outputs will then be focused to capture the client’s imagination and provide assistance on complex issues both quickly and comprehensively. The analyst’s job must not be to intimidate clients with information, but rather to entice them with it.

6.8 Differentiate the Task
Last, but certainly not least, competitive analysts must differentiate the nature of the analysis they perform from other forms of analysis concurrently being done within their enterprises. Analysts and their decision makers should be careful not to overrate. Overemphasise or try and duplicate the analysis of organizations, industries, and markets that is typically provided by economists, financial analysts, sector analysts and/or market researchers. These individuals are primarily concerned with short-term financial gains, customer satisfaction, product placement, and related concerns, not necessarily with
long-term competitiveness and strategic development. Executives who understand the reasons these functions vary, and the respective benefits each generates, will be far better served by their analyst and their potential contribution to decision making.

7 Conclusion

Gilad (1994) notes that intelligence is an insight about externally motivated change, future developments and their implications to the organisation. Done well, analysis and the intelligence developed from it, helps the organisation to reduce its risk level in dealing with both threats and opportunities in its competitive environment. Paradoxically, the analysis function tends to suffer during recessionary periods, when organizations reduce their commitment to what they deem as less-essential functions. Those working in analysis know that this is precisely the time when investment in such activity should increase, in order to better prepare the firm for the challenges ahead.

We have identified five key causes of failure at the individual level and would draw special attention to the issue of cognitive bias, a factor which both analysts and educators should be acutely aware. It is noted that the teaching of analysis receives superficial attention amongst educators and at best, is haphazard. Analysis is a critical component in aiding executives in their decision making and as such, effective analysts must know how to properly position their efforts and focus, over time, across the 10 key continua presented in this paper. That is not to say that analysts always need to find the middle ground on each continuum. In fact, the middle ground may be exactly the wrong place to be. Rather, the analyst needs to determine where they should be on a project along each of the continua, and be able to adapt along each, as the project and its evolution demands. Unfortunately, teaching the art of pragmatism, intuition and "gut feel" is less evident and is an element of learning which continues to evade educators, not least because of their lack of experience of actually doing this sort of work in a commercial environment, their lack of experience at having to defend the findings of analysis when critical decisions will be taken on the basis of their work, and their almost inevitable lack of understanding of what is needed by employers.

The problems inherent in analysis failure can be fixed and we present eight guiding principle for the firm which will assist in helping to prevent analysis failure and improve the potential for the delivery of high quality output. When the full realisation of the impact that skilled analysts can have on a firm’s success is understood, it makes sense that this would be one way of promoting best practice. The ultimate ambition would be the development of a validated education path which leads to a recognised qualification with standards of practice and Chartered status. Such a development would only be good news in the dynamic, globalised markets within which most organisations now conduct their business and which seek to recruit employees able to show the attainment of a ‘gold’ standard of expertise.

8 Future Work

This paper is the fore-runner to a funded research project which aims to better understand the precise personal qualities which employers seek when hiring analysts and the expertise which they expect their new employees to bring to the firm. This will then be the subject of a large scale, survey of professionals in higher education to discover whether, and how, these highly valued ‘hard’ and ‘soft’ skills are being taught in the classroom. It is anticipated that the findings from this research will inform and guide future curriculum developments for post graduate educational offerings.

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Simon’s theorem reconsidered – towards a theoretical framework for competitive intelligence

Per Frankelius
Swedish Business School, Örebro University, Sweden, per.frankelius@oru.se

Abstract
The departure of this article is what I call Simon’s theorem. In Administrative Behaviour from 1945, Herbert Simon presented a dilemma that later paved the way to a theory that gave him the Nobel Prize. The core of his theorem is that economic agents are not rational due to lack of information and lack of interpretation capability. The theorem is powerful, but in this article I put forward critique. The essence of this critique is that Simon’s theorem can be interpreted as a perspective in which lack of information is taken as a given fact. In reality information could be added by means of active searching or as a result of external information push that reach the entrepreneurial agents. One question that remains is what kind of information is important for entrepreneurs. Paradigms on that will be discussed. Besides the theoretical discussion this article includes a case study: The Arn case.

Keywords: Herbert Simon, Economic theories, Information searching, X factors, Cave model.

1 Introduction
The discipline competitive intelligence needs a theoretical base. It also needs a definition of scope, which is a distinctive characteristic in relation to for example traditional economic theories. If one is interested in business intelligence from a scientific point of view, Herbert Simon should be an important reference. During his life, he wrote around 1000 publications. He is one of the most cited social scientists in the world. However, Simon for some reason has not been discovered by the main-stream business intelligence literature. I want to change that. At the same time I have a critical perspective also regarding Simon’s theorem and want to suggest some complements.

In sum I will suggest Simon’s theorem as an interesting theoretical frame for the discipline competitive intelligence. I will also suggest that a more wide definition (in relation to mainstream economic theory) of the business environment could be the essence of the discipline competitive intelligence. Moreover I will integrate the information-search-aspect into the synthesis.
2 Simon’s theorem

In 1945 Herbert Simon’s book *Administrative Behaviour*, was published – at the same time his doctoral dissertation. The departure of his analysis was people’s dedication to make rational decisions. To do that, one has to choose from many alternatives and relate each of them to one’s goals. One must also understand the consequence of each choice in relation to the goal. In Simon’s word, one has to “calculate consequences”

But in the real world, Simon recognized, no one has full knowledge on every thinkable alternatives that affect different outcomes. Therefore, reality is characterized as uncertainty. This uncertainty is caused by two factors: partly limited information, partly limited capacity to understand and interpret the information people has. I call the last aspect “limited thinking capability” (compare Hamrefors, 1999 and Wahlström, 2004).

Limited information is partly referring to how things connect to each other in the complex world. That means also complexity inside the organization one work in. But another kind of limited information is about information of the world outside. The first kind is about causality of the world, and the second is about “fact shortage” regarding the components that constitute the complex world.

The consequence of the reasoning above, Simon concluded, is that people are irrational. That was a shocking message for traditional economists, who had assumed that people on the market act in a rational way. Part of this assumption is the assumption of perfect information. But Simon added that people try to be rational inside the frame of limited information and limited understanding of causality. He coined a term for this kind of rationality: *bounded rationality*. In figure 1, I have tried to summarize Simon’s theorem.

3 How did Simon’s theorem emerge?

From where did Simon get his inspiration for his theorem? He mentions two inspiration sources in his Nobel Speech. The first one was Chester Barnard’s *The Functions of the Executive* published in 1938. Barnard had based his book on his own practical experience as CEO at New Jersey Bell Telephone Company, and as manager of other private, idealistic and public organizations. Let me cite Simon: “Barnard proposed original theories, which have stood up well under empirical scrutiny, of the nature of the authority mechanism in organizations, and of the motivational bases for employee acceptance of organizational goals (the so-called ‘inducements-contributions’ theory); and he provided a realistic description of organizational decision making, which he characterized as ‘opportunistic.’ The numerous references
to Bernard’s work in *Administrative Behaviour* attest, though inadequately, to the impact he had on my own thinking about organizations.” (Simon, 1978, p. 352).

This citation is interesting. First, it shows that Simon credits Chester Barnard, for bringing new scientific theories to the world. Second, he verifies that these theories have proved to resist critique and empirical tests. Third, it shows that it was in fact a book written by a *practitioner* that became the building block of the revolutionary theory. I call companies ”Site B” of high-level knowledge production (Frankelius, 2009) and consider this phenomenon as an example of knowledge production Mode 2 (Gibbons, Limoges, Nowotny, Schartzman, Scott and Trow, 1994). We often hear the argument that “business should not affect academic research” because of the importance of “academic freedom”. However, if the goal is original research results, one may have to reconsider what we mean by ”freedom”. In the Simon case, the interaction with Barnard (business world) was the very core of the theoretical progress.

The second inspiration source, Simon mentions, was an empirical study of public recreation organizations in Milwaukee. He conducted this study 1934–5. These facilities were managed by two different actors, partly the school board, partly the city public works department. Both had the same view on the goals, and there was no competition among them. Despite this fact – and that was strange Simon thought – the two had not the same opinion on how to use the financial resources they had. He concluded, that intellectually they could not understand what was right (Simon, 1978). They had limited information about causal relationships between different factors. In this case the problem was not lack of external information, but lack of information about causalities in the complex real world.

4 Forerunners of Simon and a note on Simon’s originality

Simon was not the first to come up with ideas on mental information processing. The old Greeks of course discussed the theme. An important milestone in more modern times was John Locke and his *Essay Concerning Human Understanding* (Locke, 1689). In this masterpiece he put forward one of the first theories on knowledge processes. When we are born our soul is a *tabula rasa*, according to Locke. We know nothing. Every person’s knowledge is a result of information search and interpretation processes over time. Our senses send different ”perceptions of things” to our brain and the brain in turn creates ideas about the world by means of these perceptions. Locke used the term “sensation” for this process. His central question was: From where does our knowledge come from? His answer was: From experience! He argued that our observation was either about external sensible objects, or about the internal operations of our minds. These two sources of thinking substance were – according to Locke’s own metaphor – the fountains of knowledge, from where all the ideas we have, or can naturally have, do spring.

Another pioneering field of research foregoing Simon was marketing. In fact information shortage was the very starting point for a lot of marketing scientists since the beginning of the 20th Century. For example advertising was seen as a mean for bringing more information to customers, so that they could make better decisions (Kleppner, 1925).

The notion of limited thinking capacity was the core of the theory developed by Ludwik Fleck in 1935 (Fleck, 1935). That was about 30 years before Thomas Kuhn’s theory on paradigms. If turning to organizational theory the Garbage can theory (GCT) should be mentioned. This theory was proposed by Cohen, March, and Olsen (1972) in a seminal article. Each time a
new problem arises, past solutions are the thing decision makers turn to. The problem is that they don’t know the right solution, so they have to use the trial-and-error-method. In other words they have not full information about solutions. This theory is very wide spread, but notice it is a frame for problem-solving. It is not a frame that in a explicit way consider the surrounding world and external information.

Another reference on this theme is the more modern Gilad (1994). A more comprehensive literature discussion is outside the scope of this article (see Solberg Sølien, 2005).

Despite some theoretical forerunners with similar ideas, Herbert Simon’s theory was very coherent and logic. The originality of Simon is that he brought together decision processes, information shortages and economic theory into a coherent and logical wholeness. His brilliant work gave him the Nobel Prize in 1978.

5 Connecting Simon’s theorem with the notion of information search

My vision is an improved and more voluntaristic model of intelligence-based business development, based on Simon’s theorem but complemented with new parts. There are many interesting angels that could take us one step forward to a better theory. One such angel is information search theories or models, for example the one found in Aguilar’s book on environmental scanning methods (Aguilar, 1967). These kind of theories are so well-known to business intelligence researchers that I just mention the connection here. For more on this literature, see Solberg Sølien (2005). See also Hoppe (2009).

I will come back to the implication of connecting Simon’s theory with information search theories. Before that, in the next section, I discuss theories on how to construct the external environment theoretically.

6 Theoretical perspectives on the external world from economic actors point of view

In classical economic theory the external environment, from a company’s point of view, is assumed to consist of primarily customers and suppliers (other buyers and sellers).

In the wake of Adam Smith, both economics and business economics have come to focus on the market as the central factor in the environment. The linchpin of economic theorists became what is known as neoclassical theory. This school is usually said to have begun in the 1870s, and its hallmarks are concepts such as marginal utility, marginal cost and marginal income. Its pioneers are Stanley W. Jevons (1835–82), Carl Menger (1840–1921) and Léon Walras (1834–1910).

Basically, these scholars attempted to refine the ideas presented by Adam Smith in 1776. For the neo-classicists, companies and the environment consisted of actors who bought and sold goods: demand and supply. The buyers concentrated on product values and prices before they make their actions. This model is advantageous because the market – comprising potential or existing buyers – is normally quite important for company development. There are an abundance of special models which, in different ways, describe the market or the customers in more or less detail. Examples are segmentation models and relational models, which should be borne in mind. Another advantage is that it makes exchange the focus of analysis. In the long run, exchange of values is one of the most fundamental things in economic contexts, besides innovation and creative energy.

A drawback of the classical model is that it defines in advance what is important in a company’s environment. The idea is that buyers (as such) and other sellers (competitors) should be in focus rather than, for instance, newspapers
which help to change people’s values or universities which produce new research results. Further, the model defines the roles that are assumed to be most important: the company as a buying and selling actor. There are, however, also roles of developing technology, acquiring inspiration, and many others. In addition, numerous exchanges in the real world go on that do not involve payment. Collaboration and diverse forms of “no debited services” may have far greater significance in business life than what the traditional theory prescribes. Moreover, the classical model is static and culminates in discussions of equilibrium between demand and supply. Where is the time dimension?

A developed economic model is the network model. But still focus is on actors that one company has business relationships with. In practice that means buyers and sellers (see Hammarkvist, Håkansson & Mattsson, 1982).

One of the most used modern models in economic science is Michael Porter’s five forces model (Porter, 1980). He maintains that:

"Although the relevant environment is very broad, encompassing social as well as economic forces, the key aspect of the firm’s environment is the industry or industries in which it competes." (p. 3)

The building blocks of this model are competitors, buyers, substitutes, suppliers and potential entrants. That means buyers and sellers in different roles, and the model thus is quite traditional.

Also most of the modern economic and business models build on the old ones, at least regarding the view of the external world. On example is the book The New Venture Adventure from McKinsey & Company (Looser & Schldpfer, 2001). In this influencing book, used in Venture Cup, the world around a company is defined as the industry and the market – precisely according to the tradition of economic theory. It is striking that the time dimension is not obvious in the models – neither in this modern book, nor in traditional economic books.

Most economists do not understand that the world consists of more kinds of factors than economic exchange players. Consider, for example, what The Nobel Foundation wrote about Paul Krugman 13 October 2008:

“Krugman's approach is based on the premise that many goods and services can be produced more cheaply in long series, a concept generally known as economies of scale. Meanwhile, consumers demand a varied supply of goods. As a result, small-scale production for a local market is replaced by large-scale production for the world market, where firms with similar products compete with one another.”

Like most other economists Krugman’s frame of reference seems to be limited to traditional economic factors, buyers and sellers in the external context as seen from one company’s point of view. The same is true also for odd economists such as Joseph Schumpeter. He wrote:

“The economic system [is] a system in the scientific sense ... consisting of quantities of commodities, rates of commodities and prices.” (1928, s. 364).

Among the more open-minded models in the classical literature I have to mention Igor Ansoff. He has written more than 60 books and articles in the field of business strategy. Perhaps his best-known work is Corporate Strategy, published in 1965. This book – one of the world’s most read management texts – introduced strategic planning as an alternative to long-range planning which was then topical and widespread. Through his practical experience as a business leader, he realized the need for developing methods to identify opportunities and threats in the environment. He maintained that company
management must direct attention towards weak signals.

Ansoff later refined his ideas in *Strategic Management* (Ansoff, 1978). A pervasive theme of the book is that all organizations are different and have different environmental situations. One should therefore be careful when generalizing. Ansoff also distinguish between levels of turbulence in the environment. An information perspective is permeated the book in many respects. Ansoff notices the difference between experienced and factual environments (compare Simon); but he also emphasizes the importance of information, and the filters that prevent leaders from recognizing the environment’s parts or interpreting its significance.

7 That was the map, what about reality?

Customers are important external factors for most companies. On this point traditional theories matches reality. But customers are affected by factors in their environment and many of these factors are not their “buyers or sellers”. We have just to mention deceases, terrorist attacks, climate change and the media. I will here summarize one of the cases I have studied the last 20 years as a try to understand the nature of external world factors (from companies and organizations point of view but interpreted from a researcher). The case I have chosen is about a regional actor: The museum of the city Skara in Sweden. I call this story “The Arn case”.

The proficient Swedish author Jan Guillou, famous for his spy novels set in the present, suddenly surprised readers with a trilogy of historical novels. It began with *The Road to Jerusalem*, which appeared in 1998. He had thought of the book’s theme in 1996. The trilogy depicts life in the twelfth century and deals with the processes that led to the formation of Sweden as a national state. After careful investigation for the project in 1997, Guillou had concluded that the action should take place in West Götaland near the town of Skara. He noted, for instance, that the old fortress of Aranäs had yielded finds which indicated that it had been great and powerful, probably with royal connections. There were many such clues.

Anja Praesto at the Västergötland Museum began an innovative process in June 1999 by contacting Jan Guillou about an idea for “a tourist ploy”. Her initiative and continued work enabled the Museum, several municipalities, the Swedish Church and numerous businessmen to profit from Guillou’s undertaking.

Among the many measures taken to meet the sudden interest in the region, special Arn-guides were trained to help those who wanted to “travel in the footsteps of Arn”, the Crusader hero of Guillou’s trilogy. A custom-made Arn-package was launched for tourists visiting places to feel the wing-beats of history. An expensive brochure – *In Arn’s Footsteps* – was printed with an introduction by Guillou to describe such sites. Everything was combined with quotations from his books. In addition, the brochure presented a selection of the companies that tourists could visit. The Västergötland Museum in Skara also arranged a special exhibition about Arn. A logotype was registered, and became part of the connection between all these activities and communication channels.

A total of 13 places were included in the package “In Arn’s Footsteps”, which was financed by a number of municipalities, the Diocese of Skara, the insurance company Länsförsäkringar Skaraborg, the Society of Ancient Monuments and others.

Mass media played an important role in spreading information, getting people involved, and cultivating the myths. At a local level, media began to call attention to the phenomenon on 13 October 1999. The first article in the national press about the interest in Arn was published 30 March 2000 by *Göteborgs Posten*, followed by *Aftonbladet* 23 July
that year, *Arbetet* 23 July and *Dagens Nyheter* 4 August.

It was not long before the effects emerged, and some examples are worth noting. In the town of Forshem, which has a church probably built by a Templar knight, the Forshem Inn received a great boost. During the years it had normally attracted dinner guests at an average of about 16 busses annually. Since the Arn phenomenon, this has grown to some 300 busses. The company’s staff quickly expanded from two to five or six, and created a special Arn menu as part of the process. After Guillou’s books, a film was also made about the Forshem Inn which strengthened its appeal further. Broadcast by television on the Whitsun holiday in 2001, the film was seen by around one million viewers. For the 2002 season, the inn extended its premises, employed more personnel, and even produced an Arn cake for dessert.

![Anja Praesto (second from left) acted on a “X factor” in the outside world, and created an innovative concept that had many consequences on the region. Photo: Västergötland Museum, Skara.](image)

In the village of Forsvik, a monument of industrial history stands in the shape of the Forsvik Factory, which set up an exhibition entitled “In Arn’s time”. The Forsvik Café designed a special medieval menu including Pauper’s Soup, and has acquired many guests for meals.

According to Guillou’s books, Forsvik in the twelfth century was an industrial centre as well as a place for military training of Islamic type, based for example on Arabian horses (which were much faster than Swedish breeds in that period).

A large number of businesses were stimulated significantly by the interest in Arn. Besides the tourist industry, more assignments came to musicians, artists, bus companies, souvenir makers and advertising agencies. The educational associations have also offered special Arn courses. It is not easy to trace all the rings spread on the waters through Guillou’s pen.

However, a second wave of development can be identified. One instance was the launching of the Arn Plays, which had their premiere in the summer of 2002 at Läckö Castle. The twelve performances were sold out and earned enthusiastic reviews. In turn, the Arn Plays helped to increase interest in the region still further. The spring of 2004 witnessed the premiere of a film about Arn, understandably another important means of promotion. We can see that a dynamic has been generated in the region that just keeps on going.

A particularly interesting outcome was the activation of research. In the summer of 2001, a blast-furnace was discovered near Forsvik that could be dated to the twelfth century. This supports the theory that Forsvik was industrially prominent during the middle Ages. Moreover, a film team has explored the archives of the Vatican and found related material that was previously unknown to historians.

**8 What can we learn from this story?**

The Arn case showed how an odd factor (in relation to traditional economic theory) affected the mindset and interest of people who became customers to companies and organization as a result from the odd factor.
According to the case odd factors include “writers of historic books” that affect people directly and also via the mass media.

The Arn case also shows how an entrepreneur (Anja Praesto) observes the odd factor in the outside world and understands the potential to act on the factor.

This case was to a large extent about how odd factors stimulate potential buyers of products and services from some businesses (consider the effect on Forshem Inn). But the odd factor also affected the central acting agent directly (not via customers or others) in the way that the factor was the impulse that made Praesto develop her idea. See 1 and 2 in figure 2.

There are many other cases that show how odd factors affect companies and organizations directly and not via their customers or potential customers. Consider for example media that affect legislation process on pharmaceuticals. I have not space to show empirical cases on this, but the notion of this will be considered below.

I define X factors as “factors that are important for a business, but at the same time not common or central in traditional economic models”. What is significant in the real world (as well as in the X factor paradigm) can be the last thing one would expect (if this person is educated according to the traditional theory). It may be a governmental decision, as when the EU stopped Chiquita’s bananas. It may be a rapid animal disease, as when mad-cow disease turned the entire meat industry upside down and paved the way for more vegetarian restaurants. It may be a technological leap, as when VHS video was knocked out by DVD. It can be a new public road, redirecting the traffic so that Stafsjö Inn got bankrupt. Or it might be a catastrophe, as when terrorists attacked the World Trade Center, whose aftermath paralyzed the aviation industry and many more. Yes, it can be just about anything.

The challenge is to prepare for the unexpected in the pulsating world out there. That challenge calls for a free mindset. One way to categorize external world factors is presented in table 1. Notice the cells 3 and 7.

**Table 1. Categorization of external factors.**

<table>
<thead>
<tr>
<th>Slow moving</th>
<th>Important</th>
<th>Not so important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>X factors</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fast moving</th>
<th>Important</th>
<th>Not so important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>X factors</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

**Figure 2.** The X factor affecting the central agent via two different ways.

**9 New paradigms on business surroundings**

In my research I have slowly become more and more convinced that time has come for a new perspective that takes into account “X factors” (one of my first publication on this was Frankelius, 1992a). You can’t find these X factors in the traditional theories, and therefore these old, but still alive, theories are not effective tools but probably mind blockings.
10 Reconsideration of Simon’s theory: Towards the cave model.

In the light of modern tools such as external databases and the Internet one could reconsider Simons’s theorem, and that is what I try to do in this article. Another way to say it is that Simon’s theorem tends to be deterministic, but it can be transformed to a more voluntaristic theorem.

To sum up: I have tried to put forward two theoretical angels complementing Simon’s theorem. The first was the notion of the possibility for individuals to search for information, and thus solve parts of the problem caused by limited information. The other angel was the possibility to replace old economic models representing the environment with the X factor mindset.

From the conclusions above I will now suggest a pedagogical framing of the modified model that is derived from Simon’s theorem. It is always a challenge to make people understand that there are things they are not aware of. People tend to create their worldview on their existing information, and it is hard for some to admit drawbacks. Large parts of the American car industry, making heavy and petrol thirsty cars despite the environment trend recent years, is probably an example reflecting this phenomenon. I will suggest a cave metaphor (or more precise, a cave-and-drill-metaphor) for managing the mentioned problems.

In this metaphor, we all are standing in a cave. The rock around us consists of two things: lack of information and lack of thinking capability (that is Simon’s main idea). Through the small opening (hole) the manager or entrepreneur observes present buyers and suppliers as well as competitors. But he or she also notices some “X factors”. Outside the sight seen through the hole there are many more external factors that affect or could affect the focal enterprise. These factors can be people that can contribute with ideas, potential donors, potential customers, opinion leaders that affect other people, and X factors that affect or could affect the process. The interesting part is how to make the hole in the rock bigger, so that more relevant factors in the outside world can be identified.

The good news is that the hole can be expanded, so that one sees more relevant factors in the outside world. How then can one expand the hole? There are two methods. The first is simply to search for more (relevant) information. Some companies are very professional in doing this information search. One example is the Swedish biotech company Biovitrum, pending millions on sophisticated information search. The second is to train the brain to think about things from new angles. The theoretical discussion regarding traditional models vs. the X factor model can help to make the mind-shift needed. By means of this shift the actors start seeing new things because of new interpretation schemes. There are many possibilities to train and boost the way of putting things into the right perspective (Hamrefors, 1999). The cave model is presented in figure 3.

Simon did not expand his model in this way. In fact he focused on the limitations and so obviously on “bounded rationality”. He did some attempts towards a more voluntaristic direction. In a few publications he treated information handling. However that was most often about things like “artificial intelligence”. He and his doctoral students focused on psychological processes, and on computer tools that could boost these processes. They did not focus on methods for searching new information from the outside world. The only exception from this I have observed is an article where he tried to integrate information search behaviour in economic theory (Simon, 1956). The big picture is that Simon in a brilliant way put light on the problem, but did not work out so many solutions to the problem. The piece of the puzzle in form
of information search is very important in my try to develop Simon’s frame of reference.

Moreover, Simon did not discuss models or methods that help manager on how to view the business environment. This is the piece number two I have tried to integrate in the alternative model.

11 The wealth of information

In earlier publications I have suggested an equation for the analysis of information value (see Frankelius, 1992a, 1992b, 1998). The equation postulates the following: as long as the marginal revenues (r) derived from specific information (i) is higher than the marginal cost of the information (ci) in itself plus the cost of acting upon the information (ca), then the information is worth to collect and care about.

According to this equation the “effects” caused by information are two kinds: one that cause costs, and one that cause revenue. All information (also information that leads to a lot of revenue) has cost consequences, because it always is needed energy to collect information.

The problem in practice, however, is to understand on beforehand which information is relevant and worthwhile to act upon. I have suggested the World mapping method, for managing this problem (Frankelius & Rosén, 1993). The methods on the practical level to “expand the hole in the cave” will I leave outside this article.

12 Conclusions

In this paper, I have mentioned some aspects on the need for new models, and I connected the discussion to Aguilar’s ideas on information search possibilities. The main result of this article is twofold: First, a critique on traditional economic thinking regarding definition of the external environment has been presented. Second, I made a try to create a new theoretical frame for the competitive intelligence discipline.

The proposed model builds on Simon’s theorem. His theorem, I argued, is quite deterministic. Instead, the new model – the cave and drill metaphor – is more voluntaristic. I agree with Simon that people are seldom fully rational because of limitations of information and interpretation capacity. But I argue that the situation “in the cave” is not static. It is not impossible to affect.

By means of sophisticated information search methods one can discover more factors in the outer world, and in many cases that means one can consider more decision alternatives. The
consequence is that the person will become more rational (less bounded).

Moreover, there are possibilities to improve how one looks at the world that is how one look upon the information one has. By means of displacing old economic theories (including models from Michael Porter and McKinsey) with new and more free-minded models, there are reasons to believe that we improve our intelligence capacity.

The cave-and-drill-metaphor can be an interesting tool for companies and public actors in order to consider strategic issues regarding three things: the relevant external factors, the existing information in the organisations and the strategic information needs.

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The Human Factor and Competitive Intelligence: Resource, lever and key for success.

Anne-Marie Fray

*Professor of Human Resources Management
ESCEM, Tours-Poitiers, Business School
amfray@escem.fr

Abstract

The question of human resources as a lever for CI is a performance factor since it is based on competences, by means of a dynamic approach to CI, associated with proactive forms of strategy. The real concern of corporate leaders is, in fact, to implement a strategy and increase the performance of their company, and subsequently its chances of perpetuation. This position requires the development of CI players.

Keywords: Competitive Intelligence, Strategy, Player

Why do we talk about human resource levers in CI? First of all, because this question is based on a view of resources already developed in previous work, combining a proactive strategy based on the human factor, by means of competences, with a dynamic approach to CI. In second place, because time has come for competitive intelligence to leave behind its conceptual framework and begin to respond to the true concerns of decision makers: to operationalise, to make procedures more pragmatic and to combine facilitating tools with strategic objectives. The best competitive intelligence system which can be implemented is one that meets the real concerns of the corporate leaders. And yet, the real concern of corporate leaders is, in fact, to implement a strategy and increase the performance of their company, and thus its chances of perpetuation.

This is why explaining the link between a proactive strategy that uses competitive intelligence requires developing the human factor: the human factor serving CI for the performance of this strategy. To sharpen up our demonstration, we will firstly present a theoretical reflection on the two strategic approaches that require a mobilisation of human competences and environmental intelligence provided by CI, and then secondly explain the conditions required to expand the factual link between human resources and competitive intelligence.

1 Strategic approaches requiring strong involvement of the human factor

Beyond a more conventional approach (Porter model), based on environmental forces, the resource-based approach mobilises existing competences and projects the organisation in its strategic
We can ask two questions: what resources does CI mobilise and what is the role of the individual. And in what universe should the organisation be projected to optimise the link between CI and the human factor?

### 1.1 The resource-based approach: lever for knowledge action

The resource-based approach, mostly developed by Hamel and Prahalad [1990], focuses on specific resources that make a company unique. In this approach, the roots of competitive advantage are to be sought within the organisation, and the corporate leader commits the company to a process that allows it to maintain its capital of resources and competences and to acquire those required for its future development. This development is controlled according to knowledge of the environment, and relies on the know-how of the organisation.

Resources can be defined as tangible or intangible assets associated with the company. They can be classified using the typology of Hofer and Schendel [1978], which makes a distinction between five categories: financial (available cash flow, etc.), human (number of employees, level of qualification, etc.), physical (production sites, available machines, stock, etc.), organisational (information system, quality control system, procedures, etc.), technological (know-how, patents, etc.).

Grant [1991] adds reputation to this list as a sixth category, thereby emphasising the role of the intangible resources, or invisible assets, which are essential for the company. The company therefore has true assets that allow us to view it as a portfolio of resources: these resources must be assessed according to the environment and the capacity for growth of the organisation.

This assessment phase is a difficult exercise, since it is subject to the perceptions of the corporate leaders. These can be based on five criteria that make it possible to appreciate the strategic value of the resources and competences [Black and Boal, 1994]:

- criterion of resource relevance resulting from a double concordance: resources with strategy and strategy with the environment.
- criterion of scarcity: the more scarce a resource is, the more strategic it will be considered to be.
- criterion of durability: can resources be easily imitated or not;
- criterion of reproduction: the more tacit (not standardised) the competences are, the less imitable they will become. In addition, certain competences take a long time to be developed and can not be easily imitated.
- criterion of transferability or specificity: a competence simply mobilised by the company (individual competences), but not truly owned, is exposed to a higher degree of transferability.
- criterion of irreplaceable resources: a competitor cannot use a substitute competence.

The main aim of this assessment is to highlight the major resources of the organisation. However, it is not always easy to highlight these resources, insofar as conventional information systems offer a fragmented, incomplete image of them. This approach provides a new conception of the company, no longer assessing it by its product/market activities, but rather by its internal resources. In this context, a strategy is no longer considered to be a rational exercise in adaptation, but rather an architecture that guides the development of resources. From this point of view, it is up to the company to identify its own resources and key competences, to assess them in the context of their competitive environment, and then to define a strategy that mobilises them as often as possible. The human aspect is therefore one of the main factors for supporting this approach.

### 1.2 The blue ocean approach, or fully mobilised human intelligence

However, entering into competition and searching internally for resources that will create a competitive advantage, forces organisations to enter into a competitive model that has the potential to harm the business sector. This is what Kim and Mauborgne call the red ocean, a battlefield that exhausts organisations [2004].
On the other hand, the blue ocean strategy consists of taking into consideration companies and/or activities that do not currently exist, pushing back the frontiers into unexplored areas, on the creation of a new demand: the competition therefore loses its importance, and the rules of the game need to be defined. The following diagram shows the difference between red ocean (focussing on resources) and blue ocean (focussing on internal intelligence, observation of the environment and capacity for innovating thought):

<table>
<thead>
<tr>
<th><strong>Red Ocean Strategy</strong></th>
<th><strong>Blue Ocean Strategy</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>To act within the existing strategic space</td>
<td>To create an existing strategic space</td>
</tr>
<tr>
<td>To apply it to the competition</td>
<td>To leave the competition out of the game</td>
</tr>
<tr>
<td>To make use of existing demand</td>
<td>To create and conquer new demand</td>
</tr>
<tr>
<td>To accept arbitration between value and domination by costs</td>
<td>To avoid arbitration between value and domination by costs</td>
</tr>
<tr>
<td>To ensure all the activities of the company comply with its strategic choice of differentiation or domination by costs</td>
<td>To ensure all the activities of the company comply with its strategic choice of differentiation and domination by costs</td>
</tr>
</tbody>
</table>

Table 1: Red ocean and blue ocean strategies, Kim and Mauborgne, 2008

The blue ocean strategy is therefore directly linked to innovation and, more particularly, to innovation-value. In this approach, the authors insist particularly on the importance of integrating the execution and development of strategies: not only is it necessary to mobilise intelligence from the start, its appropriation by all employees is also a key factor for the success of its operationalisation. The blue ocean strategy is therefore not too different from an approach in which seeking to preserve competitive advantages becomes a luxury for the company: the concept of hyper-competition shows, for example that, paradoxically, companies must destroy their competitive advantages to create others, all in a context of hyper-information and international competition, in which the spheres of influence are essential [D’Aveni, 1995, 2002].

The change in these representations therefore compels the company in four domains:
- The first brings up the actual idea of change with the employees: why change a red ocean strategy which seems to be working fine for the time being….
- The second relates to resources, particularly intelligence, prior redundancy or a lack of ongoing training that can undermine their potential….
- The third relates to motivation: motivation of the key players, including the detection of their potential and competences, their interest in taking this path, etc.
- The fourth covers shifts in internal influence and player strategies, changing areas of uncertainty [Crozier, Friedberg, 1977]

The human aspect factor is therefore fully used to operationalise this strategy. However, to link internal intelligence and projection into the environment, the organisation needs a competitive intelligence approach that feeds this strategic approach and helps it to make decisions regarding the various paths to innovation.

1.3 A CI approach strategy based on the human factor

The reality of competitive intelligence gives preference to the perception of the environment and processes that make it possible to acquire a good understanding of the context, at the same time local, worldwide, while considering weak signals with anticipation value. The search for information if therefore inducing, since the organisation does not know exactly what it will find, the stress being placed on information analysis, structuring it and breaking it down into a strategy. In this approach, the implementation of actions is more elaborate and distributed among the

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resources of the organisation. It takes place according to the following process: search for and collection of key information and knowledge, treatment and interpretation of the collected data, formulation of strategic reasoning, implementation of actions and organisation of networks, assessment of effects and mutualisation of practices.

This dynamic approach therefore stresses the strategic aspect and the mobilisation of external and, above all, internal resources in the organisation: “Collective intelligence is a strategic corporate strategy which aims to improve its competitiveness by collecting and processing information….; this process… mobilises employees and relies on the organisation of internal and external networks” [Bournois, Romani, 2000]12. This definition promotes organisation of the approach, strategic management and, above all, the mobilisation of employees in a transversal organisational approach, in the context of network organisation.

In this approach, the result is guaranteed by formalisation which guarantees the transformation of tacit knowledge into explicit knowledge. Competitive intelligence is not merely limited to a disorganised accumulation of all kinds of information, it is a matter of producing structured knowledge for operational purposes, ahead of the computerised processing of data: CI therefore requires interpretation and analysis competences, which are the prerogative of the human “factor”. This implies protecting the information assets and not simply applying business intelligence actions: its strategic management for decision-making purposes requires the protection of the immaterial capital it forms. And yet, the immaterial capital is a major element in the organisational resource approach.

Nevertheless, a single individual alone cannot possess this essential competence, insofar as, as specified by Black and Boal [1994], a competence is more often than not part of a network of relationships between the various resources owned by the company. The complexity of this network will result in quality and perpetuation of the competences in question and, thus, the performance of the organisation.

Four fields of action therefore appear as inevitable fields for performance. These four fields are each based on the human factor: control of know-how, analysis of threats and opportunities, coordination of strategies, implementation of influence practices [Levet, Paturel, 2000].

a) control of know-how
Organisations are perpetuated thanks to the know-how owned by individuals, knowledge which is acquired, identified and developed. The added value of this know-how consists of the ability to combine specific competences and know-how, emerging for the players involved in the various layers of the business: a shift from pure performance logic to a logic of competence and learning is therefore necessary to achieve performance. The first step in any competitive intelligence process is the protection, control and enhancement of the know-how owned by the individuals. Beyond tools and processes, the human factor then becomes the main lever effect.

b) detection of threats and opportunities
The expressed know-how is sometimes subject to threats and opportunities for development. Internal threats if know-how is obsolete, external threats associated with information control, regulations, etc., but which also with the risk of laying off the best elements. The opportunities are linked to new markets, but also and above all to new partners and, therefore, to new know-how and competences.

c) coordination of strategies
The coordination of internal and external strategies requires a collective approach initially making use of distributed knowledge, and then to the players’ ability to create new know-how.

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Influence practices simultaneously rely on the articulated knowledge provided by competitive intelligence methods and on the capacity of the players to engage in paradoxical political games: the best known actions include entering a difficult market and financing a competing organisation to discover its strategy.

These four domains combine the competitive intelligence practices of connecting with knowledge-management approaches and persons, in order to ensure that the processes complement each other, offering the company a plurality of strategic options. This connection between competitive intelligence and management turns the player into a necessary key factor for competitive intelligence in the service of a proactive strategy.

2 The human factor as a performance lever for CI

The proactive strategies of the organisations show that now, companies are more in need of intelligence than information. This approach highlights a dynamic vision of CI, a link with its resources and an opening towards the importance of grey matter [Achard, 2005].

2.1 At organisational level

The first lever resides in strategic implementation of CI including all players, and a consistent internal approach. This cannot be done without the clear will of the corporate leaders and a firm commitment from the business intelligence officers, which is to say, those who make the company come to life: intelligence in this case is comparable with a creating function which brings together individuals who are involved and interdependent.

Four stages are required to reach this goal:

- Stage 1: commitment of the general management. This commitment results in a programme of changes backed by the general management, which includes the activity of business intelligence.
- Stage 2: formalisation of the business intelligence goal with a view to improving the position of the company in its competitive environment.
- Stage 3: operationalisation of the goals of the business intelligence process, setting up coordinated actions for research, treatment and distribution of useful information to the decision makers.
- Stage 4: identification of organisational issues, obtaining useful information at various levels of the company in order to draw up and implement the strategies required to reach the corporate goals.

Generally speaking, the organisation previously has to perform work to open up, exchange and share information. This is why the business intelligence officer (individual and/or collective) is important, for his/her management of the information, creation of value, quest for objectiveness, attitude towards dissonance, need to belong and possible risk of exclusion. This is all the attention the organisation must pay to the process.

A second lever resides in the transversal nature of business intelligence within the organisation: the behaviour of all the players must be behind the support of the general management. These players must share the following roles:

- Support taken over by the department directors.
- Collegial management of the CI project/process
- Creation of a CI coordinating function, with distributed responsibilities: coordinating surveillance (research, collection, distribution), analysts/experts, the decision-making level, etc.

All of the above is therefore subject to the apparent paradox of coordination versus decentralisation, avoiding a hierarchical, centralised system and giving priority to the coordination of decentralised, independent actions. For this reason, the organisation must lighten its structures and give priority to networked operation in order to distribute the practice of CI within the company.

A third level can be found in the organisation of the business intelligence network: this business intelligence is the result of crossed views, and yet, if the organisation is complex and compartmentalised, this multiple outlook
becomes a key issue. In this network, the players can be classified into three groups, working in iterative mode:

- The decision makers, who ask the questions, guide the work and validate the results.
- The specialists, who work full time with business intelligence, use technical resources, analyse information and distribute it.
- The information collectors, who are in contact with internal or external agents, represented by accountants, engineers, salespersons, executives, etc.

Three structuring dimensions can be set up, in order to encourage the support of the persons involved in this business intelligence network: the consideration of environmental conditions, the choice of an organisation chart (operating modes, information management practices, internal issues) even before implementing transversality, all aimed at achieving the production of contents with added value.

2.2 At management level

The sharing of information first requires the sharing of knowledge, if the organisation wants to put it to relevant use. The concept of transversal exchange and sharing of information is therefore essential. It is based, first of all, on networks of players:

- On a formal network
  Set up by the organisation, controlled by complex, secure process, bringing communication policy and power games into play, where we can also find formal but parallel networks (Committee for Health, Safety and Working Conditions (CHSCT), trade unions, etc).

- On an informal network.
  Based on personal and/or virtual networks (Facebook, Viadeo, etc.) and using all the places and elements of the communicators: this network also crosses the mentioned parallel instances and, in general terms, is very easy on the budget resources or investments.

However, in order to be efficient in the sense we understand it (linked with the strategy), this notion of exchange relies above all on the role of middle management. Evidently, this also requires the motivation and involvement of executives in their professional and personal networks. However, two main conditions motivate the transfer and sharing of knowledge:

- Middle management must know the strategy in order to use the collective information, protect the information and intellectual assets, and acquire information on the markets, products and clients. It therefore needs visibility of the CI policy in place.

- Middle management will only participate in the CI process if it is also given a social vision of its own situation and measures the issues in terms of positioning.

When these conditions are met, managers must be encouraged in their roles as corporate leaders, observers and analysts/experts. All employees must have access to training seminars on this topic. The aim is to create and maintain the motivation of managers, group organisers and experts who specialise in the field. Preventing the attitude of "after all, this isn't my job" therefore becomes a major concern for the management….

Middle management is obviously responsible for considering the tools to be the means and not the goal, and for integrating exchange and sharing behaviour as part of the process of opening up: sharing information, but only when they know what purpose it will fulfil.

The second step is interpretation. This is the most important phase, since it contains knowledge. It is also the most sensitive phase of the human factor aspect, in the following three stages:

- Stage 1 or stage of specifying the needs for information, of selecting the method used or the tools required. This phase can only be carried out with the support of human resources: adaptation of competences, choice of the persons involved in the process, use of each person’s informal resources (networks), ability to group together all the signals to create knowledge.

- Stage 2 or stage of the meaning given to the information and to each person's schemes: human interpretation, analysis,
assimilation of signals, etc. This phase of sharing the perception is the result of an interpretation of the organisation enhanced by the contribution of each competence.

- Stage 3 or knowledge-creation stage. The wealth of human resources in the organisation leads to a variety of interpretations. This stage of creating supports on a human factor which replaces information in context establishes links between the signals and generates knowledge with added value.

2.3 CI and Human Resources: a link to be strengthened

CI is above all associated with strategy, and strategic processes cannot be automated. CI and strategy complement each other and must maintain an integrated relationship, the success of which resides in a subtle combination of human resources and tools [Ihadjadene, Favier and Chaudron, 2003].

In this sense, CI is partially in the service of HR. For example, an understanding of the environment makes it possible to guarantee that employees will support the values of the company or to encourage comparison with the competition to understand differences in terms of management of organisations and know-how.

However, HR is also in the service of CI. For example, by promoting the acquisition of maximum information from applications, by means of job interviews or by encouraging employees to support business intelligence needs (team motivation).

The link is therefore strengthened by these aspects and also by the processes to be shared: searching for information by legal means (ethical); lightening and developing information transfer procedures (relieving workstations); ongoing training of employees with information (creating automations, understanding that certain types of information are valuable, preventing certain types of information from getting out, etc.).

In other words, to prevent the CI process from appearing as a graft which is incompatible with the company, HR and CI must work together in the following areas: aligning CI strategy with company strategy; giving priority to small breakthrough projects, working in the same direction as the strategy; starting with small groups of highly motivated, enthusiastic people; developing HR policy according to CI requirements; reorganising the structure of the company, opening up functions and reducing hierarchical levels; dedicating time, means and budget resources to CI; training in new practices and new tools.

In general terms, implementing CI in companies increases the value of the duties, positions and tasks. The HR department indirectly brings about this increase in value insofar as it manages knowledge, guarantees a social climate that encourages the circulation of information, and creates the working conditions. The link can only be strengthened by controlling the generalisation of CI practices according to the hierarchical levels, economic sectors, the size of the companies and the security and protection of know-how, developing innovation, conquering markets or taking decisions.

3 Conclusion

The aim of this article was to explain the conditions for creating a connection between the competitive intelligence approach and the competences of the organisation, held by the players, in the conceptual framework of proactive strategies. In this sense, our ambition was, within the limits set out in this theoretical article, to show how these strategic approaches increasingly use business intelligence and how human analysis of the latter plays an essential role in the success of this strategy. We also stress that theoretical lines of force and questions that emerge will only find their scientific basis through methodical testing of facts in the context of scenarios that contain the proposed research channels.
Considered as a whole, the main issue of this reading is to recover CI in the context of an analysis focusing on human intelligence. This approach therefore shows the positioning and the role of an intelligence approach, from the point of view of its strategic orientation as well as from the point of view of the managerial orientations foreseeable by and for a company. A company cannot save the cost of a prior reflection relating to the hierarchical position of a competitive intelligence cell. Should it be centralised or, on the contrary, decentralised between several departments? Should it be subjected to the organisation or, on the contrary, be positioned to break with environmental corporatism, reduce hierarchical distance as a blocking factor, shake up routines and play with uncertainty? The hierarchical position of the competitive intelligence players and their decision-making competences should therefore be subject to analysis (Salvetat 2007).

Finally, the interpretation of competitive intelligence we have chosen allows us to identify the type of paradigm enabling this connection which it includes, to outstrip a priori contrary elements which are nonetheless complementary and to set the bases for systemic interrogation of the organisation. It leads us to question its limits in terms of organisational prescription, which is to say, of the capacity to open up to all kinds of management of internal and external information and to all kinds of treatment, analysis and distribution by the players.

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Looking for Information: 
a New Approach to Consider Efficiency and Effectiveness

Pascal FRION*, Henri SAMIER**,

* Phd Student in Competitive Intelligence at the Cerege Laboratory, Institut of Administration of Enterprises, University of Poitiers. 12 years experience in Competitive Intelligence within Acrie International Network, he is also the author of two books on information needs seeking and use, Aéroport Nantes-Atlantique, rue Nungesser et Coli, 44860 Saint-Aignan-de-Grand-Lieu, France, phone : +33 [0] 614 637 855
pascal.frion@etu.univ-poitiers.fr

**graduated from the Ecole Normale Supérieur de Cachan, with a PhD in “technological watch in new products design”. Associate Professor, Director of Innovation department, ISTIA [Institute of the Science and Technology for Engineers], University of Angers. Head of master “technological innovation”, he is searcher in LAMPA Laboratory, « Arts et Métiers ParisTech Angers », Angers, France, phone : +33 [0] 241 226 549.
samier@istia.univ-angers.fr

Abstract
This paper is an exploratory review of the literature with particular reference to business organizations. Today, we observe in university research and in enterprises practices looking for information, often converges with the use of internet. We intend to show in this paper historical influences and scientific foundations over which authors build modern looking for information. Both in companies and in scholar situations, we notice a lack of methodology in how to handle the problem of looking for information, an internetization of the looking for, and a Googlelization, mostly based on the paradigm of information acceptance. How can we define an efficient and effective looking for information? We present a new approach to consider efficiency and effectiveness in looking for information.

Keywords: looking for information, efficiency, effectiveness, competitive intelligence, information acceptance paradigm.
1 Introduction

Looking for information, has been often covered in different sciences such as: information sciences, computing sciences, business studies, social sciences and humanities. Analyzing the literature shows the diversity of points of view on this issue. Both in companies and in scholarly situations, we notice a lack of methodology in looking for information. Today, we observe in university research and in enterprise practices that looking for information, often converges with Internet search. How can we evaluate efficiency and effectiveness in looking for information? In this article, we present historical influences and scientific foundations that support the different and various ways of looking for information. We consider a new approach covering information needs, seekings and use [Frion 2009b].

In our information age, digital sources should complement rather than replace the print sources and the people sources. What we observe is, in effect, the diminishing use of print sources and human sources towards more digital sources. For this reason, we limit our review of literature here mainly to the period 1990-2008.

We mainly focused on explicit looking for information literature and in the following fields: information sciences, computing sciences, business studies, social sciences and humanities. We also put forward our own enterprise experiences from over 15 years in the field.

First, we will show different points of view, in the domain of looking for information. We will present the availability of a considerable variety of terminologies in this field. Second, we will consider historical influences and scientific foundations which lead to efficiency and effectiveness in looking for information.

Third, we will analyze the typologies of looking for information according to their approach related to information.

To finish with, we will discuss and conclude temporarily on this exploratory research.

2 What is looking for information.

Information is a concept that takes different forms at different integrative levels [Wilson, 2002].

As far as this article is concerned, various terms - in alphabetical order with examples of citation - are used to:

access information [Rice, 2001, Guilhon, 2004],
acquire information [Aguilar, 1967],
brows information [Bates, 1989 et 2007, Choo, 2001],
fill a gap [Loewenstein, 1994],
retrieve information [Bates, 1989; Kahaner, 1997, p 94; Vakkari, 1999; Wilson, 1999; Kuhlthau, 2005; Belkin, 2008],
search information [Kahaner, 1997, p 69; Salmon, 1999, p 125; Patton, 1999; Wilson, 1999; Choo, 2001],
seek information [Salmon, 1999, p 45; Wilson, 1999; Dervin, 1999; Vakkari, 1999; Choo, Deltor, Turnbull, 2000, Kuhlthau, 2005; Choo, 2007], etc.

We will see further down (figure 1) different appearances in the competitive intelligence literature (legal ways to acquire information are reviewed here). Many authors alternatively use different terms, especially in countries like France where writing style tries to avoid repetitions.
We right away notice some degree of confusion. For instance, in French language, there is no such thing as a difference between searching [in digital resources] and seeking [in less specific resources]. In English language information search behavior is nested in information-seeking behavior, which is nested in information behavior [Wilson, 1999]. Environmental scanning includes both looking at information (viewing) and looking for information (searching) [Choo, 2001].

2.1 Ways to look for information in the literature

Here is a diversity and variety of selected suggestions from the literature over looking for information (although many authors use different terms):

Berripicking [Bates, 1989] the informations are scattered and they have to be picked up one at time, with the possibility to modify the picking at each step (analogy with the fruit picking in the forest);

The Information Search Process (ISP) presents a holistic view of information seeking from the user’s perspective in six stages: task initiation, selection, exploration,
focus formulation, collection and presentation [Kuhlthau, 1991];
The classic information retrieval model (see figure 2), with identical searching and approximate searching with keywords;
Probabilistic: based on occurrence and co-occurrence of keywords;
Chaining: starting with one book or article, then chaining backwards to find its references, chaining forwards in order to find the literature that uses this first document as a reference, or lateral chaining in order to identify co-authors.
Scanning, watching, screening: monitoring, updating information on a regular basis [Aguilar, 1967; Lesca, 2003; Choo 2001];
Puzzle [Fuld, 1995; Lesca, 2003];
Scenarization: hypotheses formulation that have to be confirmed or denied [Conan Doyles with Sherlock Holmes];
Proximity searching [Fuld, 1995];
Databases consultation, retrieval: accessing an available resource [Rice, 2001];
Interviews, elicitation [Naylor, 2008], subterfuge, open or covert questions [Baumard, 1999];
Ripple effect: one keyword suggests another keyword from the center towards the periphery [Fuld, 1995, p. 207];
Serendipity: finding something we where not looking for [Baumard, 1996] or encountering [Erdelez 1999];
System-oriented, users-oriented [Vakkari, 1999], and behaviours-oriented [Wilson, 1999] or actor-oriented [Polity, 2000];
The black swan approach: thinking the highly improbable [Taleb, 2007];
Collective questioning plans and inductive seeking plans [Frion, 2009a];
Creativity and mind mapping [Buzan & Buzan, 1996];
Socrates' maieutics: interpersonal skill to give birth to information;
Not seeking, rather retreating as an hermit: forget and hope for the best;
Democracy according to Google: credit the documents the most seen, as more relevant;
Quantitative Methods, qualitative methods or Mixed methods [Plano Clark & Creswell, 2008];
etc.

All these models, technics, methods, approaches, etc. have a common element. The review of the literature on looking for information, seems to tacitly adopt the hypothesis of the philosophical statement: information is in the progress paradigm. People feel that information is necessary and more information is better. Therefore it is not a surprise that we notice an internetization of information seeking, and a Googelization of information searching. Efficiency and effectiveness will depend-
among other things—on the paradigm the user follows.

2.2 Historical influences and scientific foundations to efficiency and effectiveness in looking for information

A theme stressed in the literature is the paradoxical situation that, although there is an abundance of information available, it is often difficult to obtain useful, relevant information when it is needed [Edmunds & Morris, 2000]. Even though we read about information overload, a review of the literature suggests that the results of past research in information acquisition have not always been clear-cut [Creese, 2007; Abram, 2008; Wiseman, Jawaher, Kostkova & Madle, 2008]. Some authors argue the overload of information is solely an information retrieval problem [Montebello, 1995] or a technology opportunity to help us [Porter, 1985]. Other authors argue this problem not only concerns the system but also the human who is seeing and noticing [Neugarten, 2008].

Clearly the thinking on looking for information has inherited from the agriculture age and from the industrial age. Agricultural age attributes are, among other things, a logic of “ways and means”. The literature on looking for information, very often starts from given data (not clearly from needs) and easiness. Industrial age attributes are, among other things, a logic of “results”. As for the industrial age, the various elements like controlling, standardization, lowering the risks, or scientific organization are often the basement of modern looking for information.

Information is sometimes considered as a given object, sometimes as a process [Guilhon, 2005]. Where does looking for information starts and where does it stops? Looking for information is sometimes presented as a separate task, overlapping with another distinct task or inextricably combined with another task. It is very common to meet the seeking and use combination [Choo, 2001 ou 2007; Kuhlthau, 2005; Bates, 1999]. It is rarer to meet seeking and questioning [Frion, 2009a].

Many authors on looking for information literature concentrate on technical subjects and on the organization. Information behaviour literature is surprisingly often ignored by authors who focus on technical subjects and the organization. Therefore, the literature on looking for information seems to be separated in two distinct categories: one includes the human side of the question with Achard in France [Achard, 2005] and the information behaviour school more generally with Wilson for instance [Wilson, 1999]. Another one focuses less on human traits and focuses on organizations and tools. Most of the time, looking for information literature is limited to one or to a few aspects of looking for information. How are we going to evaluate effectiveness and efficiency? Only looking at one specific topic as Descartes would suggest? Are we going to avoid separating things as Ockham would suggest? Efficiency and effectiveness will also depend on this choice—implicit or explicit choice.

A cornerstone question arises here: what is the use of looking for information and how shall we organise it? Does looking for information include sense making? Many authors suggest looking for information is not separated from using information, like Choo, and Lesca, or Dervin and Weick (with different approaches).

In many articles, particularly in French CI literature, looking for information is described separately from other tasks. The English and American information behavior literature is clearly in the information needs seeking and use (insu). When integrated to another task, looking for information is rather associated with the treating side. For instance, organizations seek and use information in order to understand and enact their worlds [Choo, 2007]. There are stages in
information seeking [Kuhlthau, 2008], therefore, in order to be effective or efficient, it means that all the stages have to be respectively effective and efficient?

According to the Competitive Intelligence approach with the integration of five main competencies, we have:

- questioning (problem formulation);
- acquiring (retrieving, seeking,);
- treating (use, analysis);
- distributing (sharing, stocking);
- and protecting (controlling, limiting accesses);

There will be “competitive intelligence” in a firm when coordination of theses skills and actions will be achieved ahead of the project. So is the Information Literacy approach with the integration of key skills. Therefore, does it make sense to assess effectiveness and efficiency for one task only?

Seeking and use are sometimes together [Choo, Wilson, etc.] in information sciences, and in business studies, these two tasks are often distinguished.

Looking for information, information searching, information seeking, information retrieval, and other terms are often studied with no precise spectrum of task. Where does looking for information start and where does it finish?

The Information Cycle

In the most used method in Competitive Intelligence across the world, in the information cycle, there is a clear distinction between the needs assessment, or questioning, and the task of collecting, or seeking information. See figure 3 for a simple representation of a 5 step cycle, according to Miller [McGonagle, 2007].

Bulinge offers a very thorough presentation of the information cycle and puts forwards its limits [Bulinge, 2006]. Clark (Clark, 2003 and 2004) and McGonagle (McGonagle, 2007) also point out the limits of the information cycle. Even though the information cycle comes in different flavours, there is a close relation between these different steps, spread in 4 or 5 steps (see a detailed 4 step presentation in figure 4).

Still, they remain separated. Sometimes different teams of people dispatch the questioning task for managers from the collection of information devoted to operating people. There is also another specific step in the information cycle, which catches the attention of most competitive intelligence authors: information treating, analysis, validation, etc. As far as the information cycle is concerned, competitive intelligence authors and professionals set up the starting point of looking for information with a strategic intent and a strategic questioning [Frion, 2009a]. Sometimes the

Figure 3: 5 step cycle [MILLER, 2007]

Figure 4: 4 step cycle [GUSTAVE, 1999]
information need will end up to a highly engineered and unique information seek in a short period of time [Frion, 2002]. More often on the contrary, there will be an ongoing watching structure organised to watch and monitor information in the short, medium and long run with authors like Dou [Desvals & Dou, 1992; Dou, 2008], Lesca, and Fuld for instance.

It is therefore a choice to decide when looking for information starts and when it finishes. For instance, can we say that the maieutics of Socrates is looking for information?

Further, when data is already there on the desk, on the screen, or in the office, the effectiveness and efficiency is more in manipulating data or information than looking for it? As soon as the information is present there is no clear distinction in the vocabulary used between managing present information and acquiring absent information. Managing skills are different from and complement the exploring skills. In the literature, looking for absent information is often seen as not separated from treating present information. Many examples can be read in Aguilar, Bulinge, Choo, Dou [Desvals & Dou, 1992; Dou, 2008], Lesca, etc.

There seem to be an implicit agreement among authors of this subjects to integrate looking for information in a larger system than just picking data on the Internet for instance. Completely rational decision making requires information gathering and information processing beyond the capabilities of any organization. In practice, organizational decision making departs from the rational ideal [Epstein, 2007] in important ways depending on [Choo, 2001]:

1) the ambiguity or conflict of goals in the decision situation [goal ambiguity or conflict], and
2) the uncertainty about the methods and processes by which the goals are to be attained [technical or procedural uncertainty].

There are so many ways to present the activities of looking for information that efficiency and effectiveness will have to be specified for each situation. It is time now to turn to the presentation of efficiency and effectiveness.

3 Efficiency and effectiveness

What is an efficient looking for information? What is an effective looking for information?

In figure 1, the classic information retrieval model [Bates, 1989] tells us that an effective search occurs when keywords match. Today with the increasing use of digital searching, the keyword matching is increasingly becoming a big issue in looking for information. The good keywords show us the access to the existing information we wish. Nevertheless what is the relevance of matching keywords if keywords are not precise? Is it efficient? Is it effective?

Efficiency and effectiveness depends on various considerations.

3.1 Effectiveness

Literature tells us what is an effective looking for information, throught some topics and throught selected citations:
- Relevance. Random search, Adaptavive Random Search, are presumably not efficient, nor effective, but sometimes rather relevant;
- Evaluation of the looking for information, not information quality;
- Utility;
- Opportunity cost;
- Reliable [Fuld 1995, p373];
- Performance;
- Knowledge productivity;
- connect metatheory to method [Dervin, 1999]; physical, affective, and cognitive [Kuhlthau, 1991];
- creativity [Fuld, 35];
- context in which competitive strategy is formulated [Porter, 1985];
simultaneously information-seeking and belief-forming social systems [Cho, 2007];
the user's needs;
user's satisfaction;
collective sense-making [Lesca, 2003];
learning curve and information literacy;
credibility of the information sources [digital, print, people sources];
cultural perspectives, beauty of the act for french people, pragmatism in anglo-saxon world, etc.

3.2 Efficiency

Literature tells us what is an efficient looking for information, throught some topics and throught selected citations:
no waste, principle of least effort;
time saving on collecting information to concentrate human resources on analysis [Porter, 1980];
the time available and if it time consuming;
too much attention to them [market signals] can be counterproductive [Porter, 1980, p. 86];
consulting information deserves meticulousness, rigour, will;
the available resources, sources of field data [Porter, 1980, p. 278];
the quality requirements in a repetitive decision making;
business survival or business development, etc.

Most specifications so far belong to the acceptance paradigm. If we select another paradigm, efficiency/effectiveness will see another point of view.

Each science bears its own criteria for effectiveness and efficiency. For instance, in business studies, looking for information should lead to a result-oriented performance: the good information to the right person at the right time [Porter 1985]; in behavioral sciences nature of the human communication is at the heart of the process [Dervin, 1999].

Efficiency and effectiveness will be subjective. We suggest that strategic looking for information must not be get started before philosophy, approaches, models, methods, technics, context, resources, cognitive styles, etc. are investigated.

Looking for information should not be settled once and for all. It should be the choice of a succession of convergent and divergent approaches in a multi-stage working session over time. This general concern would firmly root into behaviors.

The terminological inventory of the looking for information literature vocabulary would have to be correlated with the competitive intelligence classical process. Indeed, this study is not restricted to the first two steps of the process. It also stands over the treatment step and the distribution step. The reason why is in these last two steps, final users are not the ones who have collected or looked for information. Figure 5 shows an example of the terminology that can be used in a classical full process in competitive intelligence.

In his 423 page long book on looking for information (Case, 2008), Case do not select the words effectiveness nor efficiency in the subject index. He is presenting a 9 page list of words like: motivation (18 references), utility of information (14 references), avoidance (10 references), encountering information (9 references), content analysis and metatheory (5 references), noise in information theory (3 references) etc. He is also using unique reference words like: blind persons, grazing, infotainment, taboo, zapping, etc. Are these two subjects-effeciveness and efficiency-not important in looking for information?

We believe these two subjects are important and suggest a new approach to consider them.

3.3 Beyond efficiency and effectiveness

Figure 1 shows us the classic search model without reference to effectiveness nor efficiency. Indeed this model implicitly suggest to use the maximum variety
theory. As a social fact, maximum variety is used in radio and tv programs to allow a large variety of points of views to comment the news. With the maximum variety theory, are we in the field of commentary, redundancy or information? Looking for information can be efficient and effective. However, what is the point of accessing information? From effectiveness and efficiency we have to turn to relevance, accuracy, profundity, availability, representativeness, performance, objectivity, etc.

Efficiency and effectiveness will depend beforehand on the type of ground they are used and also depend on the purpose to be achieved.

No more naïve searching, no more naïve seeking.

**Information existence**

Implicitely, most authors consider that information exists.

In information sciences, the information is a raw material and use ”information recorded” [Bates, 1999; Metzger, 2002]. Daft and Weick, use the term ”discovery” for looking for information [Choo, 2001] which implicitely accepts the pre existence of information.

When we consult existing information, there is a consencus on suggesting to covert a large spectrum of available information. As in a bayesian context, more information provides us with a better understanding.

If information does not exist yet, looking for information will turn to people sources [Fuld, 37 and 418] and weak signals [Aguilar, 1967; Lesca, 2003] with prior engeneering rather than posterior treatment. Sources will not be as numerous in this situation of lack of available information.

Information skills put forwards in the looking for information are mainly concerned with managing information, treating and manipulating information, reiteratedly. There is no mainstream literature on skills to create tailored-made information on the spot for a one shot situation. As long as looking for information will stay in the information acceptance situation, the problem of looking for information might remain unchanged.

Efficiency and effectiveness are usually considered for the result of the information seeking and the methods used to look for information. There was no literature on competitive intelligence found that coverd the philosophy of looking for information. Now it is time to turn into meta consideration about looking for information and identify various points of viex concerning information. Efficiency and effectiveness will be specific for each case.

**4 From information acceptance towards information refusal ?**

A familiar saying states that "Wealth does no harm". It is clear that some authors seem to implicitely diverge from this idea. Information wealth can harm and it is sometimes claimed that the quantity of information is not necessarily positively related to quality.

A four-level spectrum is suggested:

- Information acceptance;
- information tolerance;
- information avoidance;
- and information refusal.

Going through these four levels will provide us with some specific criteria. Efficient / effective looking for information, will therefore be able to be evaluated with regards to the point of view we act.

**Information acceptance**

Information acceptance is a philosophical statement which leads to a implicite range of tasks. It is an enjoyable behavior for which information appears as being fully considered as a necessary [raw] material. There is a liking for information. The risk aversion suggests to access and to
scan available information to lower the risks.

Information exists by itself as a starting point and is available. Information is a given, it is « already there » (as Le Moigne usually puts it), separated from the question. Quantitative approach: more information is better. Information will be filtered and refined. Command formulations are sometimes of this kind: "Give me all you have on this topic", "I want a full statement", "I want to know everything", "Every little bit of information counts", "Let me know as soon as you can", "I want a real-time update on this". All these sentences reveal that information is taken as a raw material, which has to be refined through a separate process that just collecting it.

Information acceptance is an open door to scanning and watching structures, rather than projects-based approaches.

Information searching, internet inquiring, data bases quering, text-mining, data-mining, environmental scanning [Choo, 2001], technical watching [Desvals & Dou, 1992; Dou, 2008; Rodriguez, 2000] etc. mainly belong to the information acceptance. Pre-conceived ideas are considered as non professional. This is a system-oriented approach [Vakkari, 1999]. The information acceptance motto could be: "Information first".

With an information acceptance approach, efficiency will mostly depend on the theory of maximum variety in accessing channels and people sources.

With an information acceptance approach, effectiveness will mostly depend on the feeling of not forgetting any point of view.

**Information tolerance**

Information tolerance is a behavior for which information is welcome for want of anything better. Most information acceptance characteristics are present except
the liking for information. Information seeking, serendipity, information filtering, technical watch browsing, collective intelligence [Lesca], Sense-Making [Dervin, Weick for different approaches] mainly belong to the information tolerance. The regret aversion [Van Dick and Zeelenberg, 2007] is not as strong as with information acceptance.

This is a user-oriented approach [Vakkari, 1999]: there is no need to give a lot of information to his boss because he will not read it. Factual information are considered as neutral question [Just-give-me-the-facts attitude]. Common discussions are sometimes of this kind: "We never know", "Who knows", "In case it might help", "For my information", "To whom it may concern", etc. Information push is preferred to information pull, in a concern not to miss anything important.

With an information tolerance approach, efficiency will mostly depend on the feeling of selecting the useful information.

With an information tolerance approach, effectiveness will mostly depend on the use of the information in the general thinking process of the person.

**Information avoidance**

Protective belief. Information Searching In Context [Isic] prevents a person to look for some available information fearing to dislike what could be found. In medical science there is a tendency to avoid disconforting information [Case, Johnson & Allard, 2005]. Information is not blind trusted. Information strategic looking for 'multi-stage methods' (Dervin Sense-making), Kuhlthau's Information Search Process [Kuhlthau, 1991], Ellis [Ellis, 1989]), inductive approaches, seem to belong to the information avoidance. There is no regret not to know some information as much as the satisfaction to concentrate on some aspects of our curiosity. This is not so much a risk aversion rather than a risk taking belief.

Relation to information delivery with be concerned with sentences like: "only give me the Key Intelligence Topics". "Give me the salient points". "What is new". "Give me a one page memo on this". It is a qualitative approach.

Information avoidance is naturally reluctant to structure a heavy organization to scan and watch information on the long run, and rather suggests projects-based approaches.

With an information avoidance approach, efficiency will mostly depend on the subjective feeling of being in charge of the information selection.

With an information avoidance approach, effectiveness will mostly depend on confort for the person in charge of looking for and using information.

**Information refusal**

Methodological statement in reaction to information overload and to call the progress paradigm into question. Information availability is not the point. Information push is not accepted as an information ideology. Constructivist behavior for which the information is not the cornerstone of the task. Actual context and expectations formulate questions and test the environment, using information to fill information gaps. Problem formulation is refined along the way, as well as information lacks and needs. Risk taking is assumed and information is tailor-made, sometimes largely invented. It is a cognitive process within which less
Cognitive bias and emotions are taken into account and must be investigated and "tamed" a little bit, before letting the information getting into the arena. No explicit methodological information refusal has been published in international scientific literature so far. Blue Ocean Strategy [Chan & Mauborgne, 2005], Black Swan Strategy [Taleb, 2007], Mixed Methods Search [Plano & Creswell, 2008], artificial sciences [Simon, Le Moigne] is related to the problem of information refusal.

**Figure 7 : 9 classical steps to look for information in Competitive Intelligence**
Sentences we can hear with this attitude are such: "Hang on a minute", "I need to take a step back", "I need a break", "I need to defocus", [Neugarten, 2008]. People value more the strategic aspects of their projects rather than the available information. Information is of no use in itself. The information refusal motto could be: "purpose first".

With an information (methodological) refusal approach, efficiency will mostly depend on the strategic questioning from needs to projects formulation.

With an information (methodological) refusal approach, effectiveness will mostly depend on the time that has been saved, not reviewing available information.

5. Discussion over a suggested typology and limits

With this exploratory study, we noticed in the literature that the various ways to look for information where supported by different approaches of information. Efficiency and effectiveness, must therefore be respectfully different.

In Annex 1 (table 1), we tried to compute different existing typologies, presenting three main categories:

- consulting existing information;
- provoking information;
- and inventing information.

This first attempt has been done without a great succes and needs to be impoved. "Are emotions the antithesis of information seeking and use, as has been traditionally assumed?" [Dervin, 1999]. In a post industrial world, will people keep away from their emotions relatively to information?

We suggest a behavioural typology that will help us in assessing effectiveness and efficiency in looking for information:

- information acceptance;
- information tolerance;
- information avoidance;
- information refusal.

Each person, looking for information could select the most appropriate approach, select the according models, methodologies, techniques, and therefore would benefit from straightforward efficiency and effectiveness specifications.

One aspect of information has not been found in the literature dedicated to competitive intelligence so far: the difference between information, and being informed. The former is rather external to a person but not exclusively. The latter is largely internal to a person but not exclusively.

In a previous study, the authors of this article noticed an internetization of the looking for information, and also a Googlelization of the internetization [Frion, Moinet & Samier, 2007]. We notice the increase of a single approach in looking for information, often limited to the internet. If a unique methods may be efficiently done, we can not subscribe favorably to this lack of methodology.

In this article, we only skimed over a couple of subjects related to the problem of looking for information. We did'nt intend to develop the subjects like risk reduction and risk taking. Is it more risky to treat non-chosen existing and available information (information acceptance) or to spend more time on selecting specifications to pick up or invent absolutely necessary information (in a methodological refusal of information aproach)?

In term of vocabulary, the issue of information has been globalized, when it could have been distinguished in many ways (signs, signals, data, knowledge, intelligence, and the french word "renseignement", etc). For the purpose of this article the term of information has been chosen as a given, and the action of getting informed has been rather left aside. Getting informed is not limited to getting information from the environment. This last point has been underestimated in the competitive intelligence literature so far.
One more field of investigation on this subject would be the decision topic: decision formulation, decision helping, decision taking and decision making.

It would also be instructive to expend more literature exploration to information sciences, culture [Koch Parente Verville, 2008], psychology, philosophy, information management and to management at large. Indeed, there is a question that the authors do not want to develop here. That is how a person who is missing information can formulate a precise enough question or a precise enough need?

This paper is presenting four points of view of information, that have been artificially separated in order to be presented. In the real word, they complement each other. Nevertheless, some further research will have to be launched to investigate the human capacity to switch and to compose with different mindsets about information. Can we accept information, tolerate, avoid and refuse in others? What kind of effectiveness and efficiency can we achieve with a large variety of ways and means to approach information in a company?

Finally, why should we look for information? Efficiency and effectiveness will also depend on the purpose of our actions. Many reasons can be listed, to look for information among which:

- answering a precise need such as solving a problem;
- getting unstuck, finding ideas (getting out of an uncomfortable situation);
- answering a vague need such as learning, being cultivated, self-actualizing his knowledge;
- to keep oneself informed, to make inquiries about something;
- complying with social behaviours (knowing as much as others know);
- filling an emotional lack of information [fearing to miss important informations];
- following a "have to" ideology (we have to stay tune) etc.

For sure, efficiency and effectiveness in looking for information is still to be investigated further, in order to suggest behaviours, approches, models, methods and technics for firms.

6 Conclusion

Looking for information has been investigated with so many original points of views that all these contributions give us a vague picture. We could say "vagueness by the abundance of information". Are we still looking for information when we can consult it at hand? Is this efficiency? Is this effectiveness? Is this still looking for formation?

Getting to know, understanding and using more appropriate approaches, methods and techniques in looking for information, will provide the firm with a higher degree of liberty and will give people with better skills.

For sure there are plenty of different ways to look for information. Effectiveness and efficiency must be analysed as a consequence of former choices. Different levels of effectiveness and efficiency will hopefully be obtained accordingly to prior selection of information acceptance, information tolerance, information avoidance and information refusal.

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Annex 1 - Table 1 – First attempt to compute existing typologies and specifications in looking for information

<table>
<thead>
<tr>
<th>Looking for main categories</th>
<th>sub-categories</th>
<th>comments</th>
<th>Information exists (y/n)</th>
<th>Information is white, grey, black (w/g/b)</th>
<th>Quantitative Mix (qt/ql/mm)</th>
<th>Agencecy (y/n)</th>
<th>Reproducibility automatically (y/n)</th>
<th>Number of needs formulation(s)</th>
<th>Necessity of the availability of information (y/n)</th>
<th>Work on the side of information, task or need (i, t, n)</th>
<th>Kuhlthau: affective (feelings), cognitive (thoughts) physical (action), (a, t, p)</th>
<th>Futility system oriented, user-oriented, actor-oriented, s, u, a</th>
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<tr>
<td>Consultation</td>
<td>- existing document</td>
<td>Access to a known well of information</td>
<td>y</td>
<td>w</td>
<td>gt</td>
<td>n</td>
<td>y</td>
<td>several</td>
<td>y</td>
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<td>p</td>
<td>s</td>
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<td></td>
<td>- berrypicking</td>
<td>Collection of what is available</td>
<td>y</td>
<td>w, g</td>
<td>gt</td>
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<td>n</td>
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<td></td>
<td>- watching, scanning</td>
<td>Update of what is available</td>
<td>y</td>
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<td></td>
<td>- maximum variety theory</td>
<td>Sample with a lot of chance</td>
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<td></td>
<td>- vectorial, boolean, probabilist</td>
<td>Presentation of what is available</td>
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<td>Provocation</td>
<td>- Socrates maieutics</td>
<td>People source</td>
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<td></td>
<td>- personal thinking</td>
<td>Imagination, memory</td>
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<td>- integration, association</td>
<td>« Asian » approach</td>
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<td>- Acire questioning plan</td>
<td>Inventive modelling</td>
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<td></td>
<td>- expert</td>
<td>Co-production</td>
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<td>- puzzle</td>
<td>Collective intelligence</td>
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<td>n</td>
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<tr>
<td>Creativity</td>
<td>- brainstorming</td>
<td>Collective intelligence / imagination</td>
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<td>g, b</td>
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<td></td>
<td>- black swan</td>
<td>Looking for the highly improbable</td>
<td>Y, n</td>
<td>g, b</td>
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<td>n</td>
<td>permanence</td>
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<td>Creative governance rather than administrave</td>
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<td></td>
<td>- expert</td>
<td>Co-production, need modification, tailored made information transfer</td>
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<td>- scenari</td>
<td>Sherlock Holmes</td>
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</table>
The generation of a rumour: from emergence to percolation

Laurent GAILDRAUD*, Henri SAMIER**, Jean Maurice BRUNEAU***

* Economic Intelligence Consultant, Marseille, France
laurent.gaildraud@wanadoo.fr

** ISTIA, University of Angers
LAMPA Laboratory, « Arts et Métiers ParisTech Angers », Angers, France
samier@istia.univ-angers.fr

*** Associate Professor, PhD, Institut Telecom Telecom SudParis Evry, France
jean-maurice.bruneau@int-evry.fr

Abstract

In the context of informational war, rumours are more than ever lethal weapons. They have been widely explored from two points of view. First, how to build a rumour from the social sciences and psychological point of view and second from the way it propagates through mathematical patterns. Various studies are mainly about retrospective analysis about facts, which are trying to deduce effects about strategic, sociological, anthropological, historical or economical aspects of companies or other kind of organisations. Some studies show some analogous propagation patterns between rumours and epidemics. Those patterns are based on viruses, various diseases or bush fire spread. The point of our work is to answer the question “Is it possible to control propagation and, if so, how can we do so?” Our paper is about the emergence phase and the triggering of a rumour. This stage has not been thoroughly studied as it seems delicate and controversial. We suggest revealing how to orchestrate rumours. Is it scientifically possible to foresee rumours? Which pattern is applicable to triggering a rumour? At the beginning of our paper, we will show how are built the rumours and what the basic rules we have to follow are to make them work. In the second part of our paper, we will identify external and internal factors of the emergence of a rumour. The point is to gather all the ingredients to make a successful rumour. The analysis of external factors shows the influence of an anxious environment mixed with other factors like moon phases, amount of sun, rain and electromagnetic storms for examples are favourable to the spread of rumours. The internal factors are about people (and investors) emotional states of mind and others less conventional. In the third part of our paper, we will demonstrate that new patterns of percolation by links, by sites and networks are relevantly applicable and rely on the nature of the rumour. It is a new understanding of the emergence of a rumour we suggest. Through the knowledge and the analysis of the percolation of rumours we have elaborated a watchdog solution of media surveillance, which has aims to detect a rumour, warn management, to protect and counter-attack against risks of rumour. We broaden the advantages and limitations of our solution to new orientations of research.

Keywords: rumour, emergence, percolation, triggering

1. Introduction

Why is it that the phenomenon of rumour has always existed and will probably always stay in the news? The existence and the propagation of rumours are widely based on people’s needs to be loved (love,
friendship, tenderness), the need for security (money, fear), the need to be acknowledged (identity, feeling of belongings, comprehension, pride) and self-esteem (ideology, arrogance). The need to communicate is often present to satisfy the four major needs.

Rumours are all around us and take different shapes and sizes with various names. A rumour is generally associated with the concept of false information. It is not that easy, if all rumours meant false information, we all knew what to think about them. We just have to discard them. The point is rumours can be true and that precisely is what is disturbing. A rumour can be assimilated to a hoax regarding the fact that it has very low impact on real economy and the life of whose which are propagating or suffering from the rumour. The Internet becomes an accelerating factor creating value as well as an accelerating factor of crisis.

In an information networking age, information becomes a social point of recognition. Therefore, the “mouth to ear” or “buzz” on the Internet became important enough to see companies offering to their clients has become their e-reputation. As any perishable product, rumour have a life expectancy and a sell-by-date.

2. Rumour and the phenomenon of emergence.

There are two majors phases in the life cycle of a rumour: the principle of emergence and the impact of propagation. We will notice that the rate propagation has been widely studied more specifically in the area of the mathematics of social sciences. Generally those many studies have for postulate that rumours spread on the same mathematical pattern than epidemic outbreak. Rumours spreading would be based on propagation of disease. In a word short, rumour means disease. This is a point on which we do not fully agree. For us, rumour is seen as a superior social bound. The rumour appears to us to be a higher mode of expression of the social link than it embodies. As an eminent form of delousing which one finds with primates. In addition, the “control” of the propagation of the rumour seems to correspond to an illusory form of power taken by some managers as we can see in politics and top-end management in companies. It is why appeared relevant to us to explore the process of emergence of rumour in order to unveil the triggering factors on one hand and on the other hand to propose a model for the release of rumour. This initial phase requires a precise focused analysis to orchestrate a rumour.

At first, how does one identify or recognize a rumour? It exists three levels of recognition of a rumour, the explicit level, the implicit level and the anthropological level.

First, the explicit level and announce call upon the primary feelings with negative connotations, which are revolt, hatred or dislike. Primary feelings with positive connotation such as love or pleasure (except if you are laughing about someone) are less favourable for the rumour. In rumour history, we notice that the statistical distribution of the type of rumour is the following o

66% of the rumours call upon hatred and make opposition to corporatism. They are against-something (anti-nuclear power, anti-owner, anti-religion)
25% of the rumours call upon the fear catastrophies or diseases,
7% of the rumours are unclassified,
2% of the rumours call upon positive elements (statistically negligible).

Let’s notice that hatred and fear alone account for 91% of the rumour base, which shows the nature of identification of rumour on this explicit level.

Secondly, the implicit level and psychological sides messages that will have a social aspect, moralizer and which often concern popular sayings, a proverb.
Thirdly, the anthropological level calls upon the primary fears. The explicit level intervenes obviously in the percolation of rumour, thus we will take care of the immediate designation of a culprit at the explicit level (politician, cell phone and brain cancers, toys containing lead-based paint etc).

2.1. Initial conditions of rumour

The retrospective and historical analysis of the rumours shows the existence of the initial conditions favourable with the release of rumours and their propagation. Its initial conditions are:

- made of anxious surroundings,
- distance from the cause of anxiety,
- emergency,
- the evocation of the daily object,
- racism,
- the abuse of good feelings,

surroundings coming from different contexts as the financial context, which we will develop further.

I am not sure what you want to say here - CS.

2.2. Anxiety and surroundings

The first condition for the emergence of rumour is the anxious character in the environment of the context in which it will be able to be propagated. Rosnow (ROSNOW, 1991) was one of the first to show that anxious environment as well as uncertainty was a factor of emergence of a rumour and not necessarily a factor of their propagation. Thus, many anonymous works on the area show that a rumour has a stronger probability of being triggered in an anxious context. Therefore, there are two classes of events for generating anxiety: the unforeseeable and the foreseeable events. There is a strong link between to stress, thus the orchestration of a rumour cannot be based on this randomness. Events of September 11, 2001, attacks on London, on Madrid, a tsunami, or flight flew are perfect examples. Nevertheless, waiting does not exempt of the necessary meticulous preparation to the construction of a rumour. The “rumorocrats” will be attentive and patient to orchestrate their rumour. Being rare, these unforeseeable events, will be coupled with events known by everyone. The annual report periods are for example a take-over of company, a change in the management, elections, a change in the government or the year-end financial report. All these events are to be watched carefully, it is easy to anticipate on them. From a political point of view, any form of election, and particularly the presidential elections are a rare, foreseeable event and do generally generate anxiety. The effect for a nation is to be plunged temporarily in paralysed during weeks before the final vote.

2.3. The distance from anxiety

Sereval works of LEYENS [LEYENS, 2000] showed it was possible to evaluate the quantity of anxiety generated by events and particularly according to the places where they appear. This principle named “phenomenon of kilometric death”, expresses “the degree of anxiety” according to the distance in kilometres to which a catastrophe proceeds. The author expresses a scenario of fire in Belgium and analyzes the reactions in Belgium and England. The scenario begins with the reading from a press article which described a terrible fire, in Belgium, having resulted in many deaths under particularly unbearable conditions. The reactions of the citizen readers were related to feelings of pain, sadness, anger, fear, sorrow, culpability, regret and despair. The reactions of the English readers were related to sadness, anger and fear. These four emotions, considered as primary feelings, are shared by humans and by certain animals. Whereas sorrow, culpability, regret and despair are exclusively human emotions. Thus LEYENS showed that the proximity of a the disaster increased the anxious character of the event if it happens near the population. One of the conclusions of the
study shows that the human being does not distribute its empathy in a uniform way. For example an ethnic massacre in Africa will have a stronger impact near African nations than near European ones. But as for the case of the people who died from the tsunami on the beaches of Thailand, Europeans felt concerned because some compatriots were killed as they were on vacation over there. The choice of proximity of the anxious event seems determining or the monitoring of the threshold of percolation.

2.4. Urgency of the rumour

The character of emergency of a rumour has to freeze the judgement. The urgency is often the consequence of a crisis that requires an informational need. This need increases, on one hand, the speculation, on the other hand, is favourable to “the informational intoxication”. The principle of “urgency” used in the rumours follows the approach of the type “the house is on fire”. It will rather call upon the immediate action (or reaction) than call upon the reflexion. Indeed, the rumour must call upon a form of echo anchored in its past, its beliefs, and the myths even possibly in an collective unconsciousness. This explains the fact that the more traditional/conventional one rumour remains, the more it will be likely to work. On the contrary a too innovative rumour and without roots in the unconscious collective will have little chance to work. Thus a rumour having worked 10 times will be likely much more to work one more time compared to a rumour too “far away” from the unconscious collective of a group.

2.5. The rumour rules

2.5.1. The evocation of the daily object

The evocation of the daily object is a phenomenon comparable with “kilometric death”. In fact, a “dangerous” object near one will have a dangerous perception stronger than a distant object. This explains the big hit of some families of rumour such as health alerts. For example, the rumours according to which Mc Donald puts worms in hamburgers or that the Kentucky Fried Chicken’s chain makes us eat rat are well known rumours. Thus the proximity supports the dramatic aspect of the rumour message and will be kept in mind thanks to percolation.

2.5.2. Racism

This historical component is present in many rumours and appears as being a triggering and percolating factor in rumours. The propagation of the rumour is a way of speaking about oneself, its values without revealing itself and of saying what the individual thinks in a hidden way. By propagating a rumour, the individual propagates his paradigms and his prototypes of thought.

For example, “la rumeur d’Orléans” has this racist character because the owner of store was Jewish. According to this rumour, this store of fine underwear would be the place of kidnapping of women to feed a network of prostitution. Of course, this rumour was spread throughout all the cities in France. It even appeared in Korea (and the Jew became Japanese over there). We find also this factor in the rumour on disappearances of the dead people in the Chinese area of the 13th district of Paris. A similar one was the rumour of the evacuation of the Jews of the World Trade Center just before September 11, 2001. Thus the fear of the other, racism is always a sure thing and we will keep that in mind to orchestrate our rumour.

2.5.3. The abuse of good feelings

A percolating factor seems the abuse of good feelings because the propagation is performed better if accompanied by a humanist feeling. It is up to you, by propagating such a rumour; you will help orphans from Darfur, bashed women, anonymous alcoholics, AIDS sick people etc. Well, by propagating this rumour you are going to contribute to make the world better.
For example, the rumour in 1995 of an 8 year’s old little girl named Amy BRUCE. Touched by a very rare orphan disease in England, people were to donate some money to cure her. Almost 15 years later Amy is still 8 years old. It looks like rumours can confer an eternal youth.

Finally, in the development of the factors which intervene under the initial conditions of a rumour the financial context deserves some development.

2.5.4. Financial context
How is it possible that a company such as Apple could lose 4 billion dollars in market cap in one hour on May 16, 2007 because of a rumour appeared on Internet on the Endgadget site (endgadget.com) Even if a flat denial is made a few hours later, the process is engaged. The rumours in the financial context are of significant interest as it developed studies of “behavioural finance”. For example, regarding the mergers & acquisition, the initiator will be confronted with the increase in share value of the company they wants to buy and is likely to induce a phenomenon which will be extremely costly for him. This same initiator will in parallel see the value of his own title regarding the cash flow he needs to pull out sounds fine, but is the meaning. In France, the duration cycle of a shared offer is around one month as is the average life expectancy of a rumour. Synchronizing both events would increase the efficiency of the rumor.

3. Rumour’s evaluation model.
3.1. The intangible value.
Can one evaluate the value of the intangible capital of a rumour? The consequences of a rumour are apprivable a posteriori which means “the action is over”. Several examples show the significant impact a rumour can have on the value of a company.

But to sounds fine its value a priori, we will borrow the decomposition of the value within the meaning of the analysis of the value that breaks up it by the estimate values, use and exchange.

The estimate value can be regarded as being the subjective value granted by the individual to the rumour or the information if it does not know that it is a rumour.

The use value can be regarded as the expectation of the individual covered by the rumour and its impact.

The exchange value can be regarded as being the possibility of exchanging the rumour against another rumour.

But which model could we apply to the evaluation of the intangible asset of a rumour? We find answers in the works of PORTNOFF [PORTNOFF 2005] and F. DRUEL [DRUEL 2007] an answer which seems to adapt to rumour problems.

Indeed, the authors propose an evaluation according to two axes of attractiveness and perenniality check that will have each qualitative and quantitative criteria. But as in our problems of rumour, the quantitative criteria are reduced to a few number, we will adapt the model with the criteria oriented to the rumour and the criteria specific to the target (the company).

The rumour criteria correspond to the initial conditions seen previously as well as the characteristics of construction of a rumour such as the anxious environment, the distance from anxiety, the emergency character of the message, the compliance with the rules of the rumour, the credibility of the rumour, the non-verifiable character of the rumour, the probable effect of the rumour, number influential sites and finally the existence of equivalent rumours on sites specialised in denials of rumour.

The criteria of the target correspond to the external and internal characteristics of the latter which are the notoriety of the company, the profit warning of the company, the competing promptness of the sector, its competitive position, the crisis management of the attacked target.

The first axis of attractiveness of a rumour is in direct link with its singular
construction and allows us to propose the following criteria of attractiveness:

Criteria of Rumour Attractiveness (CRA):
CRA1 Environment anxious,
CRA2 The distance from anxiety,
CRA3 Urgency of the message,
CRA4 Compliance with the rumour rules \(^1\) (racism, evocation of the daily object, abuse of good feelings).

Criteria of Attractiveness of Target (CAC):
CAC1 Notoriety of the company,
CAC2 Profit warning,
CAC3 Competing promptness of the sector.

The axis of perenniality of a rumour is connected with its diffusion and of its propagation and has a character of collective organization (network social, communities, buzz, etc). Thus we define the following criteria of perenniality:

Criteria of Rumour Perenniality (CRP):
CRP1 Credibility of the rumour,
CRP2 Authority of the initiator,
CRP3 Non verifiable character of the rumour,

Criteria of Perenniality of Target (CPT):
CPT1 The crisis management of the attacked target,
CPT2 Competitive Position of the company
CPT3 Nature of the activity of the company.

We can thus make a chart of the 12 criteria according to the axis X-coordinate of attractiveness and perenniality and the
y-axis with the rumour criteria and the criteria of the target. (figure n°2).

The time sector 0:00 - 3h (in top on the left) gathers the rumour criteria according to perenniality.

The time sector 3:00 - 6h (in bottom on the right) gathers the criteria of the target according to perenniality.

The time sector 6:00 - 9h (in bottom on the left) gathers the criteria of the targets according to the attractiveness.

The time sector 9:00 - 12h (in top on the left) gathers the rumour criteria according to the attractiveness.

By the evaluation of each criterion according to a scale from 1 to 10, we connect the whole of the point to represent a surface corresponding to the intangible asset of the rumour. Thus, we can evaluate a priori and a posteriori several storyline or construction of rumour in order to optimize its impact or any other factor.

3.2. Probabilistic Value

As we have just seen, the rumour is multifactor and multi level. Thus the initial conditions that are identified make it possible to understand the phenomenon of rumour emergence but do not show the existence of a model that would make possible the understanding of the phenomenon of release of a rumour.

If the randomness of a rumour is recognized, the many statistical models of rumour tested relate to the propagation. For our part, we make the assumption that the model of release of rumour can also follow a model of probability. Among the many existing statistical models, it appeared to us that the model of percolation was mostly appropriated to the release of the rumour. Indeed, before being propagated a rumour must be triggered and this phenomenon has not been studied so much. We chose the model of percolation because in one hand it is used in the random surroundings and particularly in the field of materials and in the other hand, it is transposable in a relevant way to the initial phase of rumour.

To define the percolation we will consider: an informational network multi sources, named RIM,

a distant couple of information sources CSI,

a parameter Pr ranging between 0 and 1,

a measurement obtained of the CSI named Pp.

The two properties of a couple of information sources CSI will be open or closed according to the probability Pr. Thus the CSI has the communicating property (open) with probability Pr and the no communicating property (closed) with probability (1 − Pr).

The communicating denomination (open) means that CSI exchanges information whereas if it is no communicating (closed) that means that it does not intervene and thus logically is not considered.

The probability of percolation takes the form of the following function:

\[ F(Pr) = p \text{ (of 0 ad infinitum)} \]

Critical point PC will be such as \( F(Pr) \) is null if \( Pr < PC \).

Thus with this simple model, there will be release of the rumour when \( Pr > PC \). (T0, T1, T2).

If the initial conditions of a rumour are met, i.e. that we have in the principal circle the anxious environment, the distance from anxiety, the emergency character, the evocation of the daily object, the racism or the abuse of good feelings then we have a critical point. The model of percolation well describes the phenomenon of release of rumour under its initial conditions, as shown in the figure T0, T1, T2 but the model introduces the concept of probability of percolation that transforms the randomness of the release into a phenomenon of probability.

Thus the model seems adapted to the phenomenon of rumour, because it explains how the release is carried out, but does not explain why. Of course, we could refine the type of model of percolation in order to specify if the percolation of
Bernoulli on the networks is more relevant than the percolation of site, but we will orientate our work towards the determination of the influential elements on the probability of percolation in order to propose in the future a predictive model of detection of rumour.

The companies try to protect themselves against from possible informational attacks such as hacking and rumours. For a company to be protected from this type of danger, they must initially watch all that it is said about her. By organizing an efficient watchdog with the means such as human, organisational, methodological and software, it will know in real-time her environment. For example the SNCF has set up for several years an effective system of Business Intelligence at the corporate level in order to keep an eye on their E-reputation and to protect themselves against rumour as well.

But on the internet the noneconomic human factor has a natural tendency to be structured in community of all forms (blog, instant messaging, mash up, etc). Indeed, such as tribes, the Community Net surfers and other social networks trigger rumours and propagate them. In our view, the rumour follows a model of fractal propagation such as it corresponds to its deep nature [BERNERS-LEE, 1997]. The warning sites such as Hoax buster, snoope, snoope2, the encyclopaedia of the rumours, (Ian Harold Brunvand), are quite revealing. On the Internet, the mode of diffusion of rumors remains traditional such as the email, the Web sites, the blogs, the sites Community and the social networks.

4. Case studies

In July 2005, a rumour came about concerning the takeover of Danone by the giant of food & beverages PepsiCo. As it normally does the rumour is going to last approximately one month. Here are the facts:

July the 6th 2005, an article in Challenge magazine is going to reveal that Danone could face a takeover from PepsiCo. PepsiCo would already have taken 3% of Danone shares would be ready to spend between 25 et 30 Billions Euro.

July the 7th, Danone’s shares increase by 5% at the opening of the stock exchange.

July the 19th, Danone’s shares increase 10%.

July the 20th, Danone’s shares have increased 27% since the 7th of July. This stage, the increase on the shares represents 4,3 Billions Euros.

Danone announced a downfall of its benefits for the semester as much as 36%.

22nd of July, PepsiCo’s meeting of the board doesn’t mention a word on Danone case.

25th of July, PepsiCo declare no intention about a takeover on Danone.

August the 2nd, the International Herald Tribune reveals the name of a columnist at Challenge Magazine: Christine Mital. C. Mital is Franck Riboud’s sister. F. Riboud is Danone's CEO.

End of the rumour. Normal life expectancy of one month.

January 2006, C.Mital died from a stroke.

End of the story.

For the Danone/PepsiCo case the criteria of Criteria are :

CRA1 a) July the 6th. A reason for disappointment: Paris is dejected to host the Olympic games. London was chosen.

b) July the 7th, anxious environment, London bombings at 8:50 am, killing 57 commuters and making 700 injured.

CRA2 The geographical distance from anxiety, London to Paris is a 40 minutes flight.

CRA3 Urgency of the message, One of the first criteria for a information from a trader point of view is urgency.
CRA4 Compliance with the rumor rules see notice

CAC1 Notoriety of the company, Danone is one the largests company in France. It belongs to the CAC 40.

CAC2 Quoted Value of the company, Criticism profile warning

CAC3 Competing promptness of the sector, Price competition

CRP1 Credibility of the rumor, The Danone/PepsiCo rumor of takeover is quite old in fact and quite credible.

CRP2 Authority of initiator, Challenge magazine is a respected source

CRP3 Non verifiable character of the rumor, Price of the target company skyrocket

For Danone takeover, it would have been easy to check on PepsiCo intentions. By law, in France, the initiator of the takeover has to declare his willing to proceed to the AMF (Autorité des marchés financiers) before it takes action.

In any takeover, increase on the value of the shares of the target company.

CPT3 Nature of the activity of the company,

The weakest company against rumor are the one which have their products close to their clients. Products for the day to day life. Company with a secret of manufacturing.
Figure T1

Attractiveness

1. CRA1: London bombings
2. CRA2: London-Paris is a 40 minutes flight
3. CRA3: Existence of equivalent rumour
4. CRA4: Moon effect, sun effect, holiday effect etc

Perennialit

1. CRP1: The Danone/PepsiCo takeover is an old story quite believable
2. CRP2: The source: Challenge magazine is well respected in France
3. CRP3: Price of the target C° skyrocket

Criteria of Target

1. CAC1: Danone belongs to 40 biggest C° in France
2. CAC2: Profit Warning
3. CAC3: Competing promptness of the sector

Criteria of Rumour

1. CPT1: Crisis management
2. CPT2: Competitive position
3. CPT3: Nature of the activity of the company
5 Discussion

List sorted by importance of the criteria in the Danone’s case:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRA1</td>
<td>Anxious environment : London bombings (58 death and more than 700 injured)</td>
</tr>
<tr>
<td>CRA2</td>
<td>London / Paris proximity</td>
</tr>
<tr>
<td>CRA3</td>
<td>Existence of equivalent rumour</td>
</tr>
<tr>
<td>CRA4</td>
<td>Compliance with the rumour rules</td>
</tr>
<tr>
<td>CRP1</td>
<td>The Danone / PepsiCo takeover</td>
</tr>
<tr>
<td>CRP2</td>
<td>The source : Challenge magazine is well respected in France</td>
</tr>
<tr>
<td>CRP3</td>
<td>Price of the target S°</td>
</tr>
<tr>
<td>CAC1</td>
<td>Notoriety of the company : Danone belongs to 40 biggest S° in France</td>
</tr>
<tr>
<td>CAC2</td>
<td>Profit warning : just before the rumour Franck RIBOUD, the Danone Manager was on the edge to announce a massive downturn.</td>
</tr>
<tr>
<td>CAC3</td>
<td>Competing promptness of the sector</td>
</tr>
<tr>
<td>CPT1</td>
<td>Crisis management</td>
</tr>
<tr>
<td>CPT2</td>
<td>Competitive Position of the company</td>
</tr>
<tr>
<td>CPT3</td>
<td>Nature of the activity of the company</td>
</tr>
</tbody>
</table>

NB : CRPT3 criteria is to evaluate if the rumour is working.
The Danone’s case pepsico reveals at even the information as been contradicted by Pepsico the rumour works anyway. In own model the number of criteria are 13 with 8 of them minimum to obtain percolation which mean the surveillance as to bee on those 8 criteria in priority (CRA 1 to 4 and CAC 1 to 3).

When the rumour is spreading those criteria of perenity are going to amplify or reduce the impact of the rumour. Our empirical model seem to be validate on the Danone/Pepsico’s rumor. Odiously the model as to be tested and/or optimized on other cases.

6 Conclusion

The case Danone/PepsiCo is a “cas d’école” as it gathered a large amount of ingredients to trigger a rumour. Some of them have been setup others rely more on pure circumstances and/or straight luck.

Trough this example, we suggest that if the ingredients cumulate to a certain threshold, the rumour does start. The difficulty is to quantify the ingredients constituting the threshold.

In this article, we saw the initial conditions of the release of a rumour that was based on anxiety, distance, urgency, etc. We tested the model of percolation of rumour in order to explain it’s functioning without to correlate the probability of percolation to one of the influential factors. It leaves to us to continue this work in order to look further into the comprehension of this mechanism. Our objective is in the long term to find a model predictive of detection of rumours in order to anticipate them in the attacks and crisis management. Finally by the proposal of the model of evaluation of a rumour we are able to improve the strategies of rumour attack and to help the targets to protect it against rumours. This work is for us encouraging because from immemorial time and whatever the cultures, the rumour always had a promising future.

1 We mean by compliance with rumour rules, the rules that do not trigger the rumours but increase and amplify them. If we apply all we know about behavioral finance to our cycle of rumour we increase substantially the consequences of the rumour on the stock value of the company involved by the rumour.

Example 1: the moon effect. The stock return is twice higher close to the new moon compare to the full moon (Dichev & Janes, 2003). The 6th of July was a precisely on a new moon. Start your rumour about takeover on a new moon…

Example 2: the sun effect : the yearly stock return is 24% higher on sunny days compare to cloudy days (Hirshleifer et Shumway, 2003). Start your rumour in summer…

Example 3: the week-end effect. The influence on stock return depends of the day of the week (Gibbons & Hess, 1981). Monday being the worst day and Friday the best). The 7th of July was a Thursday. Start your rumour after Wednesdays…

Example 4: the holiday effect. The closer from the vacation, the better is the stock return (Fields 1934, Lakonishok & Simdt, 1984, Keim 2000). July is the beginning of summer vacation in France. Etc…

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Tracking business news on the World Wide Web for dynamic CI
study of industries

Brigitte Gay*
*Group ESC Business School Toulouse
France
b.gay@esc.toulouse.fr

Abstract
In this study, we show that mining the World Wide Web for business transactions together with the use of network analysis can give us a clear understanding of global transactional activities but also of corporate managers’ individual strategies. Using this analysis, we offer managers insights into the best ways to dynamically evaluate their local and global environment as well as their own position and its strategic relevance.

Keywords: Competitive Intelligence, Market Intelligence, Business Intelligence, Software production

1 Introduction
The globalization of markets for technology as well as fast innovation diffusion through complex networks of business relationships (including innovation rapid off shoring to Asia in recent years) have created a competitive challenge of major proportion to corporate leaders. Companies are experimenting with new approaches to the management of business relationships. Corporate strategies involving mergers, acquisitions, spin-offs, and a plethora of alliances are creating decentralized operational units within and across the boundary of the firm.

How a boundary between the core (inside the firm) and the periphery (outside the firm) is drawn reflects a company’s ability to invest in innovation and will affect its business performance. Networks rather than firms have thus become the organizing level at which firms compete with each other. One role of competitive intelligence is to help firms understand and master their position in complex, networked, and very global industries.

Executives will need to address the following:
- Treat information overload and its automatic feed to the decision-making process
- Understand global industry dynamics and anticipate sectors evolution and competitors or partners moves
- Understand how corporate managers need to chose their organizational boundaries to implement their strategies in growth and constant restructuring as well as fit in the complex networked world into which they are embedded

This implies that information is processed and structured in accordance with many types of industry watch (competitive; technology; economic and financial; spatial) and that navigable network maps and tables, displaying extracted entities and semantic...
relationships are derived dynamically from this information.

Technologies that perform semantic analysis of unstructured documents (coming from open-source such as press releases or ‘professional’ sources such as proprietary databases), including syntactic and semantic parsing of sentences, are therefore crucial. Moreover, the development of sophisticated techniques for Social Network Analysis and Mining (SNAM) for analysis of social and business communities has recently increased. In this study, we show that mining the World Wide Web for business transactions together with the use of network analysis can give us explicitly insights into global transactional activities but also on managers’ individual strategies. Using this analysis, we offer managers insights into the best ways to dynamically evaluate their local and global environment as well as their own position and its strategic relevance.

2 Background data

The following section gives an overview on alliances and how networked organizations are enmeshed into unstable, complex, alliance networks that represent the market. This section is followed by the description of the methodology used to track and process open source data on alliances in business news for use in competitive intelligence.

2.1 Alliances as elaborate strategic constructions

The proliferation of alliances marks a shift in the conception of the intrinsic nature of competition, which is increasingly characterized by sustained multi-purpose technological change, the demands of innovation-led production, and fast entry in new and global markets. This has led to the notion that the key to success in coming years lies in the creation of collaborative advantage through strategic alliances13 [Das and Teng, 2000].

Importantly, as written by [Dunning J. H., 1995], “An asset-seeking alliance response does have implications for governance structures” … “the term alliance capitalism might be a more appropriate description of the features of innovation-led capitalism now spreading through the globalizing economy, than the term hierarchical capitalism”.

Therefore, contrary to long-established views, contemporary organizations are increasingly built out of emergent linkages, linkages that are transient in that they are formed, maintained, broken, and reformed with considerable facility [Palmer, Friedland and Singh, 1986] [Monge and Contractor, 2003]. The firm has, within the network, the opportunity to pursue its idiosyncratic competencies and to complement others. Firms entering alliances become close in the network, affect their own specific governance structure but also the overall network structure and therefore other firms’ embeddedness and governance structure. Networks, rather than firms, become the organizing level at which firms compete with each other [Gomes-Casseres, 1994]. The broader network level structure establishes the extended resource endowments, whereas, at egonet14- and firm- levels, resource idiosyncrasy can be achieved. Firms are connected to each others in multiple networks of resources and influence or are influenced by information/knowledge flows derived from the structure to which they belong [Gulati, Nohria, and Zaheer, 2000].

Anand and Khanna [2000] provide compelling evidence for the existence of

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13 An alliance is a formal agreement establishing an association or alliance between nations or other groups to achieve a particular aim.

14 In network analysis, a network is a set of actors connected by a set of ties. A single focal actor is called an “ego”. The set of actors ego has ties with are called “alters”. The ensemble of ego, his alters, and all ties among these (including those to ego) is called an ego network or egonet (Borgatti and Foster, 2003).
positive outcomes in managing many alliances. Firms forming many alliances extract more of the value created relative to their partners and are perceived by financial markets as more value creating. A firm position in the industry as well as its ego network will thus have a profound influence on its overall performance; hence the importance of networking capabilities.

The network as a whole, therefore, permits elaborate constructions borne from complementary skills, that allow the handling of complex situations a firm can’t follow on its own as well as rapid adjustment to sustained change in highly competitive industries. Individual firm performance can be conceived only if the firm ‘fits into the network’ i.e. performs capably a missing, complementary, function. For Miles and Snow [1986], there is “symmetry between the characteristics and operations of the dynamic network and the features and behaviour of the firms within an industry (or major industry segment)”. Therefore, to the widespread agreement that most industries can contemporaneously support companies with different competitive strategies, is added another role firms have to play: that of implicit interdependence among competitors. Interdependence is needed not only for the firm to meet the dual objectives of innovation and performance, but also for the whole industry. As the industry, or major industry segment, evolves, so must the elaborated complementary constructions.

Understanding the network dynamics that influence the formation of new alliances may help managers design alliances portfolio and therefore deal structures that do not constrain firms’ future action. Managers that fathom out firm optimal positioning in a network may also derive possible control and information benefits. Who controls the bigger network and why, and possible limits and constraints of networks, are relevant issues.

Historically, strategy and structure have evolved together. They need now to address the networking dimensions between organizations.

2.2 Processing business news from the WWW

We chose the global biopharmaceutical industry for our analysis.

A database of interfirm deals was assembled by querying specialized internet sites (leading sources for business news releases, company press releases, company web pages and annual reports, as well as regulatory filings; see figure 1 as an example) for alliances (or legal binding agreements between two or more firms) made in this industry in the years 2000 to 2007, and employing Perl scripts to collect and parse data.

We have extracted from these business news the different transactions between companies, their type and modalities, and the different phases these transactions are going through.

Other steps concern the ability to extract information about technological or product or process innovations to help understand how they diffuse throughout

4/9/2009 Merck & Co., Inc. (MRK) [JOBS] and Cardiome Pharma Corp. (COM.TO) Sign License Agreement for Vernakalant, an Investigational Drug for Treatment of Atrial Fibrillation; Cardiome Could Receive up to $600 Million.

WHITEHOUSE STATION, N.J. & VANCOUVER--(BUSINESS WIRE)--Merck & Co., Inc. and Cardiome Pharma Corp. (NASDAQ: CRME / TSX: COM) today announced a collaboration and license agreement for the development and commercialization of vernakalant, an investigational candidate for the treatment of atrial fibrillation. The agreement provides Merck with exclusive global rights to the oral formulation of vernakalant (vernakalant [oral]) for the maintenance of normal heart rhythm in patients with atrial fibrillation, and provides a Merck affiliate, Merck Sharp & Dohme (Switzerland) GmbH, with exclusive rights outside of the United States, Canada and Mexico to the intravenous (IV) formulation of vernakalant (vernakalant [IV]) for rapid conversion of acute atrial fibrillation to normal heart rhythm.

Figure 1 An example of business news as available on a company website
the industry global deal network. In particular, we need to distinguish between in-licensing and out-licensing deals (direction of funds, technology, or product flows) and between the different steps in the value chain. We can also define deal terms (royalty, milestones payments, etc) to try for example valuing a company that depends on its licensing revenues or when benchmarking deals (Villiger and Bogdan, 2009). We can also track chains of events related to a given operation to see how much time it takes and, if it succeeds, what could be the ensuing steps:

- Types of innovations and ways they are specified.
- Types of relationships between companies via the way news are organized and termed.

Network maps with actual nodes and links were drawn to address primary questions about network structure and dynamics by using TETRALOGIE network display program (IRIT) for large network visualization and analysis. A weighted spring embedder was employed to assign node locations, using an algorithm developed following the work of Fruchterman Reingold [1991], and Dousset [2003]. From these data, over several years, it is then possible to analyze quite in depth the industry dynamics and companies’ strategies, health and potential as their deal-making activities evolve.

3 The networked global pharmaceutical industry

Because it is exchanged extremely quickly worldwide through contracts, or binding legal agreements between firms, innovation has been termed “open innovation”. In the pharmaceutical industry for example, our database reveals that there were about 6000 contracts signed between firms in 2004 and 2005. These transactions form complex “webs” of interactions or networks. These networks describe technological /products/financial flows, etc in the various sectors of an industry and their dynamics.

Network analysis must be done at multiple levels (Figure 2) and thus describe networks of contracts:

- At industry level
  - In each market segment of the industry; market segments and their growth dynamics are analyzed separately. The sum of these analyses will help reconstitute the whole picture or industry level.
  - In a company “neighbourhood”: whom with are a firm’s partners interacting?
- At firm level; we look here at the transaction choices of any individual firm and their evolution

Some examples are given at industry, market segment, and firm levels in the following sections to illustrate the points discussed above.
3.1 Analysis at Industry and sector level

The pharmaceutical industry network for period 2004-2005 is shown in figure 2 (Industry level). Though this network appears as an intricate mesh of interactions, it is not random. The point is illustrated in figure 3 which depicts the alliance network of a major biopharmaceutical sector and compares its network structure to that of a random network.

The two network structures are obviously very different. The biopharmaceutical sector shows that three firms accrue all links. These firms are mostly licensing out technologies of high value to the industry (database analysis). These results show the danger of averaging data. A proper analysis also means that we treat data dynamically and not in a static way. Snapshots of the alliance network at two different periods (Figures 4 and 5) illustrate this point simply. While the three firms indeed dominate the network, figure 5 (period 2002-2003) clearly shows the arrival of competitors as well as a decrease in the number of alliances of the three firms. With a more thorough examination of the database, we can look at the different technological cycles within this
Figure 4. Alliances in the biotech sector for period 1. This industry segment is dominated by three ‘hubs’, firms A, B, and C. To help visualization, nodes are replaced on the graph by bars, the size of which being proportional, for each node, to its alliance score or degree.

Figure 5. Alliances in the biotech sector for period 2. The graph shows that the number of alliances diminishes for firms A, B, and C compared to Figure 2. Concurrently, the graph shows the emergence of new competing firms (delimited by a ring on the graph). Nodes position is kept constant in Figures 4 and 5 to help track changes in alliance activity.
sector, understand which firms are licensing in or out technologies/products/processes and their value as perceived by the market (defined by the number of contracts and amount of money involved in the deals). Thus, when looking for a partner firm, it becomes possible to see whether this firm is innovative or not, whether its innovation are mature or not, and whether the firm can be innovative throughout the innovation life cycle of a sector as well as during all the innovation cycles the industry sector is experimenting. It is also feasible to assess with whom the firm is partnering and the type of partners it choose.

3.2 Analysis at firm-level

Starting again from the network obtained in figure 2 by mining the web, we can quickly draw, for all the firms in the network, their individual contractual activities. Figure 6 shows that, by comparing the transacting activities of two firms in a major biopharmaceutical sector, we can infer firms’ strategy. The number and turn-over of new partners is high for one firm (left of figure 6) while the other (right of figure 6) has fewer and more

Figure 6 New contract agreements and network evolution for two competing biopharmaceutical companies (arrows). Four temporal markers representing 4 discrete time periods (years 2003 to 2006) in a major market segment of the pharmaceutical industry are disposed in a clockwise manner on a “dial”. Nodes or firms involved in only one period are placed on the periphery and close to the fixed numbered marker (or year) of the “dial”. As nodes/firms are involved in more periods, and therefore transacting on a more sustained basis, they get closer to the center of the dial. These nodes represent more permanent actors.
stable partners. This shows that, in a high tech market segment prone to instability, while one firm takes risks easily and relies on an ‘open’ business model, the other prefers stability. Acquiring knowledge about one firm’s own partners is also important. A specific example is given in figure 7. The temporal analysis of transactions in a firm’s “neighborhood” shows that in 2005, the network of transactions is very crowded in the vicinity of this firm. Many of its competitors are in fact interacting with its partners or partners’ partners.

Using the same tools and dataset, the global reach of firms and of the industry or industry sector can be assessed. Some examples will be given in the next section.

![Figure 7](image)

Figure 7 The neighborhood of a firm alliance network for period 2003-2006. The position of the firm is denoted by a black arrow. The nodes/firms are replaced by a series of bars that indicate the yearly number of transactions for any given node. The transactions are oriented on the graph in a clockwise manner, transactions made in 2003 being in the upper right of the graph, those in 2004 and 2005 in the bottom right and left respectively, while transactions made in 2006 are on the upper left. The graph depicts first as well as second-order transactions (i.e., transactions made by the firm itself and by its partners respectively). The network of interfirm linkages reveals that a profusion of second-order interactions involving many competitors (identified from the dataset) occurs mostly in 2005 revealing a high competitive activity in the firm neighborhood.
4 Worldwide information from Open Source Data

Though we have presented mostly network maps to describe the data, histograms, maps, etc., can also be drawn. A histogram of the number of new transactions made on a yearly basis by countries present in our dataset is presented in figure 8. The first five countries in terms of alliance number are, as expected in this industry, the United States, Canada, Germany, the United Kingdom, and Japan. The growth dynamics are not very good in the sense that from 2004 to 2005 few countries increase their alliance number. China, respectively), reveals that in 2004 China is essentially connected to western countries and Japan while in 2005 a network is starting to take form in Asia with China at its center. Thus, the lack of autonomy of Asia in 2004 and its dependency on Western countries seems to be progressively replaced by an altogether different picture depicting the rise of a more autonomous Asian continent led by China. Therefore, while in terms of number of contracts, the position of China is not threatening, the mapping of network dynamics gives added value of use to competitive intelligence.

This analysis naturally can be done at industry and sector level.

![Figure 8 Differences in alliance numbers across countries in 2004 and 2005](image)

though clearly outranked by the US, is the only country that almost doubles its alliance number thus jumping from rank 11 to rank 6. A network analysis of the links between countries reveals much more. Taking China again as an example, and comparing the global alliance network in 2004 to that in 2005 (figure 9 and 10 respectively), reveals that in 2004 China is essentially connected to western countries and Japan while in 2005 a network is starting to take form in Asia with China at its center. Thus, the lack of autonomy of Asia in 2004 and its dependency on Western countries seems to be progressively replaced by an altogether different picture depicting the rise of a more autonomous Asian continent led by China. Therefore, while in terms of number of contracts, the position of China is not threatening, the mapping of network dynamics gives added value of use to competitive intelligence.

This analysis naturally can be done at industry and sector level.

The global reach of a firm (partner or competitor) can also be assessed rapidly and dynamically. A static example is given in figure 11. There, the global reach of two Japanese firms, Eisai and Takeda is examined. Though Takeda is older than Eisai, Eisai is more global.
Figure 9 Linkages between countries in 2004; the position of China is highlighted by a black arrow.

Figure 10 Linkages between countries in 2005; the position of China is highlighted by a black arrow.
When negotiating, recouping this data with data such as that in figure 6 can be used to appraise partners and competitors.

Finally, geographic maps can be drawn showing exchanges between continents, countries, metro regions, or cities. While simple, the map in figure 12 reveals the extent and relevance of intra- and inter-
continent exchanges in a major biopharmaceutical market sector from 2006 to 2007. There, the level of Figure 12 Worldwide alliance network between continents; period 2006-2007. There, the level of exchanges between Europe and the US is extensive and equivalent on both sides.

Additionally, while Asia imports more from the US than it exports, this is not true for Europe. The exchanges between Europe and Asia are equally scarce though Europe, and more precisely Germany and the United Kingdom, have assets in this sector.

5 Discussion

The goal of the paper was to provide clear examples of the contribution of the analysis of alliance network dynamics for use in competitive intelligence. Networks analysis can give us an understanding of the following:

Industry or industry sector dynamics including the identification of flows (technical/products/processes/financial).

A continuous benchmarking of competitors but also partners; their alliance strategies and how these evolve (including the analysis of the turn-over of their contracts), their level of risk taking and the adequacy of their strategy compared to the industry/innovative sector dynamics; in which market segments firms have invested (compared to competitors’ investment; size and growth dynamics of segment?)? Whether a firm position in an industry or sector is adequate, including at a global level.

At which stages of the value chain or pipeline these flows are processed, by whom? Which firms dominate a sector or industry (for how long?), which companies are emerging and can threaten a firm’s position or even a whole market segment? What is the life cycle of a sector (emergent, growth and growth rate, maturity, obsolescence?)

An analysis country by country (city by city) of the world trade; identification of dominant countries and their policies of expansion; did they invest in key sectors?

How are countries connected to other countries? Deficiencies in the strategies of countries can be assessed. Temporal analysis of the linkages between countries can be made as well as the timely evaluation of the number and type of firms that have invested in a country thus giving evidence about the country ability to attract industrials.

Financial deal mechanisms

6 Conclusion

Network approaches have appeared as new tools for use in industrial economics and strategic management. We stress the importance for managers of tracking closely the evolving topologies at macro level (sector and industry) as well as at firm level. Today alliance dynamics respond to unrelenting technological shifts. How firms are situated within different technological cycles, ever shorter, that may overlap is therefore an important question. In particular, obsolescence of technologies occurs quickly and competing technologies are very often disruptive.

Multilevel network mapping provides the context for the analysis of the ability of firms to position themselves in unbalanced sectors of the economy and control their business environment. The continuous use of visualization techniques and network metrics could help proactive alliance management of firms under rapidly changing conditions as well as fast adjustment and counter moves to respond to constraint exercised by thousands of other players in an industry. Moreover, the use of global and local network metrics can permit tracking not only of competitors but also the qualitative evaluation of evolving positions of firm partners (old, current, or to-be) in all industrial sectors of interest. Are they well positioned, strategically, technically, sector- or industry-wise, etc? In a global environment where relying dynamically on alliances is a major strategic issue, the tracking of partners, in
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Intelligence ideals

Magnus Hoppe
School of Innovation, Design and Engineering
Mälardalen University
Sweden
Hanken Business School
Åbo Akademi University
Finland
magnus.hoppe@telia.com

Abstract
This paper is a call for a new research agenda for the topic of intelligence counterbalancing the present domination of research in the art and function of intelligence. Pursuing this path will help the intelligence academics connect to theoretical developments gained elsewhere and move towards establishing an intelligence science.

Keywords: Ideal informative flow, Ideal organizational thinking, Intelligence science, Intelligence scholars, Intelligence academics, Organized intelligence.

1 Introduction
In this paper I’m discussing two different perspectives on intelligence research: intelligence as a topic respectively intelligence as an art and a function, where I argue that both are in need but that the research on the topic so far is underdeveloped. Unfortunately the current focus on the art and the function has created a strong inside perspective that unnecessarily limit our understanding of what intelligence contains, does and mean to organizations.

In accordance with this reasoning I also suggest a more critical stance towards the intelligence cycle, the most used model for explaining intelligence. The cycle has severe deficits as it's created within a functional perspective on organizations and in conjunction with theories of formal decision-making. It supports a false belief that an ideal informative flow not only can be created but also is of utmost importance to organizations. Alas the poor empirical fit leaves us with an array of intelligence aspects unaccounted for.

The continuous use of the intelligence cycle might therefore seem puzzling, but it can be explained by its conceptual values (It's easy to use and understand) and that it works as a rational symbol bringing legitimacy both to those organizations implementing formal intelligence activities and to the intelligence professionals who manages this idealized informative flow.

Taking this stance I argue that there will never be a true science of intelligence until the field opens up to other research questions and traditions than those currently in favor. Several initiatives can support this development, where I especially hope for the development of arenas that will allow dialogues on the topic of intelligence to prosper. To find and agree upon a term depicting the unit of study, free from those currently in use, will also enable this development. My own suggestion for this term is organized
Researchers adhering to this call will also strengthen their positions as intelligence academics, counter-balancing the present domination of intelligence scholars.

In addition I argue that we must accept different and complimentary perspectives on the function of organized intelligence work. Instead of just supporting formal decision making through an informative flow apparent in the intelligence cycle, it's also possible to view organized intelligence as for example a function for supporting an ideal organizational thinking and thus the competitiveness of the organization. Viewing intelligence in different ways we will be able to explore several other aspects of intelligence that the cycle fail to disclose.

2 Research as we know it

Discussing intelligence research one often come to the conclusion that the present status is everything but satisfying. Solberg Søilen [2005:16] writes, "The study of private and public intelligence has barely started as a positive area of a research, 'a science' probably being too big a word." Several researcher claims there's lot to be done. There are arguments for more systematic research [e.g. Ganesh, Miree and Prescott 2003; Svensson Kling 1998], more quantitative studies [e.g. Calof 2006], or just better research [e.g. Fleisher, Wright and Tindale 2007].

Some research areas also seem to have been neglected. In the Call for papers to this conference one could read "there has also been a tendency to focus on the larger enterprise such as multinationals, with less attention being paid to business development and business creation, or entrepreneurship." And I'd like to add non-profit organizations and NGO:s.

According to just these few examples, it seems apparent that there's a need for more (and better) research. But to me, this picture of an immature field of research is not at all enough. The most prominent problem is, to my judgment, that it has limited itself to the art and function of competitive intelligence and therefore is constructed too close to the practice.

The effect is a prevailing emphasis on practice theories - how to do and organize intelligence - and insufficient creation of organizational theories - what intelligence mean and do to organizations. Not to mention societal effects due to the continuous expansion of organized intelligence activities. The current research tradition will therefore create results with only limited value to those researchers and laymen who are not familiar with the subject of intelligence.

Regardless of this, one might argue that we at least over the years have developed a deep understanding of how we ought to do intelligence, but I'm not that sure. Even though current research is focused on how-to-do-intelligence, too often presented studies fall back on definitions of the art or the function that are not solidly grounded.

The abyss of the problem becomes apparent when Jonathan Calof [2006:11-12], summarizing an academic track on a SCIP conference, states that there is a need to investigate what intelligence managers exactly does and that "it's been suggested that the [intelligence] model may be prescriptive, not descriptive." To me this is not barely a suggestion but a fact, and in that perspective Calofs statement can be read that more or less all research up to 2006 (at least) is based on a questionable prescriptive model together with other ungrounded assumptions of what intelligence managers does. It is not built on unprejudiced empirical studies of what is actually being done. The thought is breath taking.

3 What support and what decisions?

But, as some might argue, there are theories about what intelligence does to
organizations; it supports the decision-making processes inside the organization.

Even though I agree to some extent with this description, I'd like to pose two important questions: Is this all that intelligence do to organizations, and does it really support all kinds of decisions? These questions are of course rhetoric, but still important as they question the normal way of defining intelligence. Intelligence and those creating it does a whole lot of other things in and with organizations, but current descriptions of intelligence as decision support tend to limit the intelligence subject to more formal decision-making, leaving all other kinds of activities unaccounted for.

Already from this brief overview we can derive a possible explanation why intelligence appears to be prescriptive instead of descriptive, and why this creates problems for researchers. As long as we chose to describe intelligence in the context of formal decision-making, intelligence will be nothing less than the logic and deductive result derived from an idea that organizations are controlled by formal decision. Intelligence will in this perspective be explained as the process that makes formal decision possible, feeding correct information to the decision-makers so that rational choices can be made.

Theories come before empirical data, which in consequence will allow a poor fit with reality. In consequence we will only be able to study those aspects that theory permit us to study, at the same time we will be blind to aspects that are not accounted for in the theories guiding our understanding. This deductive way of reasoning will favor those aspects that are apparent in the intelligence cycle, the model that comes with the favored theories. It will not give a viable account of reality, which is where most research is conducted, why it will also give researchers problems in handling data that do not comply with guiding theories.

Unfortunately for those who still like to limit the field to this restricted view on intelligence, the value of formal decision-making has long been discussed and questioned since the upspring of empirically based decision making theories in the late 1950's. Lindbloms [1959] article The science of muddling through and March and Olsens [1979] garbage can theory are just the starting points of a discussion of how organizational decisions really are made. We could also add Simons [1945, 1982, 1991] extensive work on bounded rationality leaving all humans with just one option: to seek satisfying decisions instead of ideal decisions. What these theories are saying is that rational decisions can't be made. They are ideals resting on obsolete perspectives on organizations that surfaced about 100 years ago with Weber, Fayol and Taylor. The only places where we will find them nowadays are in our dreams; and in textbooks on strategy Mintzberg, Ahlstrand and Lampel [1998] would add.

To resolve this troublesome situation we'd better accept the limitations of formal decision-making [see e.g. Brunsson 2002; Mintzberg 1973; Mintzberg et al. 1998], but also accept that most decisions inside organizations are of other types, as Lord and Maher [1991] argues. Besides this, focusing on decisions we will not fully understand what other organizational activities are in need of intelligence, and how they are related to one another.

Of course there are still formal decisions, and they do count. But, according to my research (interviewing different intelligence professionals and their clients) the big formal and strategic decisions are exceptions to the rule, not the rule itself.

What my research has brought into light is that the art of intelligence, just like the art of management, is the art (not science) of muddling through. It's much more focused on the everyday troubles of the intelligence clients where the intelligence staff struggles to make their clients take more contextual aspects into account in their work, instead of relying on their present limited understanding of things.
It's also a much more symbiotic relationship where information not only is retrieved, analyzed and disseminated. Instead, information is much more shared in a two way game, and analysis is created within conversations expanding beyond the formal intelligence function. As an example, one of my informants let the analysis evolve through letting it pass through different discussions where each discussion added different perspectives to the analysis but also helped to decide what the next step would be and who else to involve. At the same time those involved shared their information and ideas (aka knowledge) of the subject at hand, and in this manner created a common and actionable understanding of things.

4 An ideal way of organizational thinking

Judging by my empirical data a complimentary view of what intelligence professionals actually do is to say that they are supporting an ideal organizational way of thinking. That is a thinking that will contribute to the wellbeing of the organization, which can be defined in three dimensions:

Think beyond what’s happening right now. Expand your reasoning into possible future developments.

Think beyond those aspects closest at hand and the actors and organizations that are directly affected by each issue. Expand your reasoning to aspects, actors and organizations that are indirectly affected.

Think beyond your own and your organizations’ interests. Judge the situation from several perspectives and chose the path that's the best for your organization, not for you.

Through their actions, products and tools intelligence professionals aim at making people expand their reasoning in these three dimensions: beyond their own bounded position in time, room and interests. But it's also about making their clients aware of their shortcomings, to never be satisfied with their present understanding of things, and acting to do something about it.

The products, the artifacts of intelligence, are just tools to accomplish this changed reasoning. Just because intelligence artifacts exist doesn't mean that they have a real value as ends in themselves. They are means not ends. Regretfully we are likely to view them as ends if we rely on the intelligence cycle as the main model for describing intelligence (as many tend to do, according to Ganesh et al. [2003] and Treverton [2004]).

Relying on the intelligence cycle, it's quite easy to argue that the effectiveness of intelligence can be found in its material output, as the cycle defines intelligence as a production process. It's a seductive stance that invites us to think intelligence can be easily described, controlled and measured. As this view rests on an assumption of functional rationality one might also claim that the intelligence professionals set to work in this process are neutral, putting together objective intelligence for the outspoken need of others. But once again, these are just ungrounded ideas that crumble in contact with reality. All people who deal with information are limited to their own bounded abilities to search, value and analyze information [Simon 1945, 1982, 1991]. But that's not all, where Jeffrey Pfeffer [1992] writes:

"Our belief that there is a right answer to most situations and that this answer can be uncovered by analysis and illuminated with more information means that those in control of the facts and the analysis can exercise substantial influence. And facts are seldom so clear cut, so unambiguous, as we might think. The manipulation and presentation of facts and analysis are often critical elements of a strategy to exercise power effectively. [247-248]"

This is a most troublesome statement for those who like to believe that intelligence professionals serve decision-makers with non-biased information and
analysis [e.g. Furustig and Sjöstedt 2000; Murphy 2005]. But if we instead chose to see intelligence professionals as organizational agents for an ideal organizational thinking this problem dissolves. In this perspective intelligence professionals are supposed to influence and exercise power. They are supposed to manipulate the information to make their clients change their thinking, reaching beyond their present understanding of things.

That my informants engage themselves in war games and workshops is in this perspective nothing strange. Instead these two examples can be viewed as most effective tools to reach the main objectives of intelligence: to help people think and act better. This is the true mission of intelligence work, not the production of intelligence artifacts.

Viewing intelligence as something that goes beyond the material output and the clear-cut boundaries of the intelligence function will open up several unexplored dimensions of intelligence. Dimensions that will add to our understanding of what intelligence managers exactly do (to comment on Calofs statement above) and what intelligence does to organizations. These dimensions have no definite end, and intelligence will accordingly never be fully explored, not to say easily defined and measured.

5 Intelligence is bubbling

This calls for another note of caution as most writers in the field of intelligence indirectly suppose that the art of intelligence is restricted to those who have it in their job descriptions. This is not at all true, as I argue above. But I'm far from first. John Prescott noticed this 20 years ago [Prescott and Smith 1989] but has also touched upon in later studies [e.g. Gibbons and Prescott 1996]. Even more explicit is Sven Hamrefors [1999] who forcefully argues that all people inside an organization seek the meaning in their specific situation creating their own intelligence if no one else helps them with it.

Unfortunately these important studies are more or less neglected by other researchers. What this research tells us is that intelligence is created everywhere. "It bubbles", as one of my informants put it, continuing to explain that it was her job to support this bubbling intelligence. And this is not a small remark at the side of the page. What this tells us is that we can't restrict the intelligence subject just to those who have it in their job descriptions.

Furthermore it also tells us that at least some intelligence professionals right now strive to support the creation of useful intelligence wherever it might surface. Stating this, it becomes apparent that we no longer can't limit the creation of intelligence to some specific formal unit and the use of intelligence to some other formal place. Because if we do, we're in the business of adjusting empirical data so it will fit with our favored theories.

To raise the stake I'll argue that for most organizations the informally constructed intelligence is much more important than the formal intelligence [see also Gibbons and Prescott 1996]. This is mainly because the informally constructed intelligence is created closer to the user, those who are supposed to act on it. Acting is much more dependent on what we feel and think and not on so-called impartial information, especially if it comes in writing [Brunsson 2002].

With reference to Hamrefors [1999] it can also be argued that informal intelligence activities always precede formal intelligence. Therefore it's not surprising that most of my informants actively seek to involve their clients in the analytical processes of intelligence. Remember, the intelligence processes and artifacts are just tools to support a strive for an ideal organizational thinking. To make the organizations members do intelligence, and do it better, is inside the normal definition of the job.

The intelligence I'm describing is the intelligence carried out in live organizations, not theoretically restricted organiza-
tions. The live situation is also what real intelligence professionals adapt to. They do not adapt to artificially prescriptive ideas of how intelligence is supposed to work according to some dominating theories on intelligence (unless they're formally or mentally circumscribed).

Furthermore, intelligence is in its adaption a much more emergent task than planned. My informants are pretty much left to themselves to create results that make a difference [see also Treverton 2004, 106]. To view them as simply answering to the commands and whims of formal decision makers is not to make them or their profession justice. This is actually also one of Benjamin Gilads [2008] main points when he spurs the new intelligence professionals to go for the fun.

6 The importance of water

But how does this agree with the normal way of describing intelligence? Can intelligence still be regarded as restricted to intelligence managers preparing analytical support for formal decision-making?

With this question comes a choice. It's quite possible to answer "yes", but with this yes comes an obligation to clearly state that the knowledge searched and gained is only viable within a restricted part of a wider field of research. Those who pursue this path cannot at the same time state that they cover the whole intelligence field. Those who make this choice will also be of little help building an intelligence science, covering other aspects and perspective on intelligence that their outspoken position will hinder them to acknowledge.

As I've argued a more becoming answer is "no", as this will allow us to explore intelligence more candidly. Unfortunately there are many writers and researchers who don't agree with me, where the most outspoken seem to be Benjamin Gilad [e.g. 1988, 1996, 2003]. Even though Gilad often takes a pragmatic stand, his writing usually revolves around formal structures for the creation of formal intelligence for formal decisions at the top levels of organizations.

To carry it further, Gilads works can be viewed as important contributions in a writing tradition that focus on practical advice and analytical aspects of intelligence, according to Solberg Søilen [2005]. With this I agree, but I must disagree when Solberg Søilen asserts that we should stick to this tradition in building an intelligence science, especially as Solberg Søilen states "It should be a positive science in the sense that it should not mix science with too much philosophy."[Ibid:14]

On the contrary, I must dispute, if we want a true science to emerge we need to accept different philosophical foundations for its knowledge constructs. But that's not all. There will never be a true science of intelligence as long as researchers fail to recognize the existence of different knowledge interests, and/or just keep researching the art and function of intelligence. The problem with this path is that it most likely will hinder those pursuing it to create a fertile distance between themselves and the subject their researching.

As a lot of intelligence research is constructed today it lacks in independence from the practice and in consequence will never gain the trust of academia. The how-to-do-intelligence tradition of the field has created an inside perspective that works like a paradigm for how to think and do research on intelligence. Of course people on the inside might call this a science, but this doesn't mean that those on the outside will agree.

The media theorist Marshall McLuhan [1995:35] once said that "we don't know who discovered water, but we are pretty sure it wasn't a fish." Building on this metaphor it can be argued that as long as most researchers are swimming in the same water as the practitioners, they will never be able to discover how much the water's influencing both their perception and their chances to give a viable account of what intelligence is really about.
Of course there is a lot of good things to be known about the swimming habits of fish, but it will not tell us anything useful about the water or how seagulls regard fish (except that fish better stay clear of the surface). What we need is a reflective division between the practice and the science, where we once again can use the idea to divide between the topic respectively the art and the function.

To find ideas how to make this division we can learn from others who already have done it. My suggestion is that we turn to the subject of marketing.

7 Learning from the emergence of marketing

Ingmar Tufvesson [2005] describes how marketing over a hundred years became both a practice and a science. The marketing subject was formed in the 1950's but it was not until the 1980's a more independent and critical research tradition formed [see also Vironmäki 2007; Svensson 2007].

One of the problems slowing down the process was that both practitioners and researchers shared the same theories, models and concepts but due to different knowledge interests put different meanings to the symbols and words used. Tufvesson illustrates this clash of contexts in figure 1. Due to this conflict a lot of time and energy got wasted in disputes over how marketing was to be approached and understood. A conflict that in retrospect could have been resolved sooner if those involved would have shown a more benign attitude towards one another.

Over the years more and more researchers took an interest in marketing, more business schools put marketing on their curriculum, and after a while independent periodicals emerged. These periodicals were very important as they allowed the researchers to develop their ideas independent from more practical demands from the marketing professionals.

Today a situation has developed where business schools, according to Vironmäki [2007], incorporate both "marketing academics" (focusing on marketing as a topic), and "marketing scholars" (focusing on marketing as a function). Both are in need as they serve different knowledge interests, Vironmäki concludes.

8 Intelligence academics and intelligence scholars

I believe there are some important things that the field of intelligence can learn from the development of marketing.

First, we must accept that the process of creating a science will take time.

Second, there is most likely a need of both intelligence academics and intelligence scholars, and that both have a rightful place in the business school environment not to mention creating knowledge about intelligence. Although a clear division between scholars and academics is to be regarded as a theoretical simplification for the sake of argument.

Nevertheless, this also poses a question how these two groups balances today? Judging by my research, most of contemporary writing focuses on the art and the function of intelligence, not the topic, and therefore can be classified as knowledge constructs for the intelligence scholars. The writings and knowledge for the intelligence academics are thus in wanting. The situation is maintained through a limited amount of intelligence

Figure 1 Tufvessons model describing the clash of contexts in the development of the marketing subject (Tufvesson 2005: figure 1.1, my translation)
academics, but also through the lack of independent periodicals and conferences where the topic of intelligence can be discussed without the influence of more practical aspects.

Fleisher, Wright and Tindale [2007] touches upon the problem with present intelligence writing when they encourage researchers to produce better articles:

"The field would be better served in both the short and medium term [...], by articles appearing in well established disciplinary and cross-disciplinary outlets. It could be argued that until, and unless, high level research is carried out and published through well-accepted or well-read outlets, CI will never achieve its place at the board table or in the curriculum of degree-based programs at top business schools. [44]"

Although the authors solution is to make intelligence studies fit into already existing outlets, they indirectly argue that most intelligence research today haven't got the right qualities for getting published elsewhere than SCIP:s periodicals.

Another way of putting it is that most of present research isn't interesting enough for other academics. It fails to connect.

SCIP:s ongoing project of redesigning the Journal of Intelligence and Management, so that it will become more accepted in academia, is a most welcome initiative. But, I must regretfully admit that I do not think this will do at all. As long as SCIP is mainly a practitioners' organization, there will always be restrictions for its periodicals to become the main arenas for discussions on the topic of intelligence.

I also like to stress that I don't suggest that neither SCIP nor its periodicals should change. The point is instead that those of us who are interested in the topic of intelligence can't expect someone else to do the job for us. Instead we have to form our own forums but also start to question existing and limiting ideas of the field, the normality that is maintained by the prominent inside perspective. Those who adhere to this call will at the same time attract attention to themselves, and in due time an avant-garde of intelligence academics will form.

9 Coming to terms with organized intelligence work

Returning to the example of marketing, intelligence is not a field that has come together over one single denominating term. Numerous are the discussions if the intelligence field should be labeled competitive intelligence, business intelligence or something equivalent.

I suggest that we leave all the existing labels of the art or function to the practitioners. Instead we, the intelligence researchers, have the opportunity to find a term of our own. A term that separates the academic field from the intelligence practice, but also allows us to embrace all intelligence activities that are carried out regardless of the label. Let us focus on what's actually being done instead, and find a term that describes what we study.

My own suggestion is that we should use the term organized intelligence work. Today this term is unaccounted for and relates to one of the first (and still viable) academic works on intelligence: Harold Wilenskys book Organizational Intelligence - Knowledge and Policy in Government and Industry [1967]. Unfortunately Wilenskys term organizational intelligence is used in a discussion about organizations displaying human like intelligence (smartness), constraining the direct adoption of this particular term.

Picking up the term organized intelligence work we will also free ourselves from unnecessary restrictions that epithets as "business" or "competitive" brings to mind. Hence giving us a chance to research the field without being forced to accept, or worse adapt to, current definitions set by practitioners.

10 Out of the water

Taking this necessary step out of the water, addressing questions about the meaning of organized intelligence, I've
conducted extensive reading of current CI-literature and literature on organization, decision-making and leadership.

In addition I’ve collected empirical data of intelligence from four different Swedish multinational companies. These studies were carried out in 2003 and 2006; encompassing twenty semi structured interviews. The final results are to be presented in my thesis The myth of the rational flow [Hoppe, Myten om det rationella flödet, 2009] October 2nd. Some of the arguments I’ve put forward in this paper are based on this research and writing, but there is more to be extracted.

I’ve already discussed the idea of an ideal organizational thinking and touched upon the idea of an ideal informative flow. I will now expand a bit on the latter as it can help us understand why many organizations use the intelligence cycle to explain why they chose to implement organized intelligence activities. In this discussion I’m distancing myself from the intelligence function, getting closer to the topic of intelligence.

11 The idea of an ideal informative flow

Supposing decisions makers knew what they needed to know, that sufficient intelligence could be collected to fulfill these needs, that all organizational interests could be satisfied in each decision, that decision makers could agree on the meaning of the collected intelligence and gain a common understanding of things, and that the rest of the organization easily would adhere to the decisions taken - only then would the intelligence cycles give an exhaustive description of how intelligence is created and used.

As both practitioners and academics know, these occasions are rare. Still, many organizations use the intelligence cycle to explain the adoption of intelligence, and one might ask oneself why?

New institutional theory will provide us with an appealing answer. All organizations are in need of symbols that tell their interest holders that the organization is run in a rational way and that the management is in control [Brunsson 2002; Meyer and Rowan 1983; Powell and DiMaggio 1991; Røvik 2000; Sjöstrand 1997]. To implement intelligence describing it in accordance with the intelligence cycle - as a function for formal decision-making - is just the type of easily used symbols of rationality organizations crave for. That the true organization and true intelligence doesn't live up to this ideal is of less importance to an organization in need of legitimacy.

To the intelligence professional the intelligence cycle also come in handy to describe what intelligence conceptually is about and why intelligence professionals, like themselves, are important to the organization.

According to my research these are the most important aspects (besides un-reflected tradition) explaining the continuous use of the intelligence cycle. In this respect the cycle follows a political logic, not the logic of empirical description. As the intelligence cycle, the idea of an ideal informative flow, has a political value it will most likely live on for a long time. What we, the intelligence researchers, should do is to simply accept this, but also recognize that we need other complimentary models and descriptions of intelligence: models and descriptions that will give us the freedom to develop an empirically grounded intelligence science.

12 Summery

In this paper I’ve compressed a vast and difficult discussion that revolves around some major problems with contemporary intelligence research but also the possibility of forming an intelligence science.

With inspiration from the emergence of marketing I’ve suggested that our understanding of intelligence can become better if we’d work together exploring the topic of intelligence, hence building a foundation for intelligence academics.
Doing this, the first step would be to acknowledge the existence of different, but still, legitimate knowledge interests and the second to find a term that depicts the unit of study for those interested in researching intelligence. For this second purpose I promote the term organized intelligence work.

We also need to find other models and perspectives on intelligence that will allow us to view this most important organizational phenomenon in new ways. The prevailing reliance on the intelligence cycle is most unfortunate as it rests on theoretical ideas that exhibit severe drawbacks confronted with empirically grounded data. To solve this situation I suggest we'll pay less attention to the material output of intelligence and instead focus on intelligence as a tool for supporting an ideal organizational thinking.

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Economic Intelligence in Small and Medium Businesses in France: a survey

Sophie Larivet
Ecole Supérieure du Commerce Extérieur
Centre de Recherche en Sciences de Gestion
France
sophie.larivet@esce.fr

Abstract: The appropriation of the concept of Competitive Intelligence is somewhat specific in France. French authors and French authorities usually talk about “Economic Intelligence” instead of using the concept of Competitive Intelligence (CI). Officially defined as “the control and protection of strategic information relevant to all economic actors”, Economic Intelligence is the combination of CI, information protection, and influence practices. Using this specific approach, a quantitative survey was conducted among 103 French companies hiring from 10 to 200 employees. The results show that a small percentage of French SMBs practice “Economic Intelligence”. These results are presented and discussed in this paper.

Keywords: Competitive Intelligence, Economic Intelligence, Small businesses, Quantitative Survey, France

1 Introduction
“Competitive Intelligence is a systematic and ethical program for gathering, analyzing, and managing any combination of data, information, and knowledge concerning the business environment in which a company operates that, when acted upon, will confer a significant competitive advantage or enable sound decisions to be made. Its primary role is strategic early warning” [Prior nd].

Readers who have an interest in Competitive Intelligence will have recognized North American SCIP’s official definition. Of course, there are numerous explanations of what is Competitive Intelligence, but those of most academic North American researchers are not radically different [Fuld 1985, Sammon et al. 1984, Tyson 1986, Fuld 1995].

In contrast, the appropriation of the concept of Competitive Intelligence is somewhat specific in Europe, compared to North America [West 1999]. For instance, Dedijer has developed the concept of Social Intelligence [Dedijer 2003]. It is even more specific in France: French authors and French authorities usually talk about Economic Intelligence instead of using the concept of Competitive Intelligence.

The phrase “Economic Intelligence” [CGP 1994] was adopted by French authorities in a concern about the differentiation between the intelligence process of political and military organizations on one side, and the one of economic organizations on the other side.
Then the phrase spread into the French-speaking community, where Competitive Intelligence was not well known.

The problem is that *Intelligence Economique* is, in French, an expression that is ambiguous and confusing (the French word *Intelligence* mainly means cleverness). Someone who has not been taught what *Intelligence Economique* means can’t guess that is has something to do with information and competition. Moreover, most of the journalists use it as a synonym for economic espionage. So it is still very important to explain what Economic Intelligence is, for French speakers, but also to point out this specificity and spark a debate in a broader community.

This French uniqueness also raises the issue of the way empirical studies have been conducted in France. In fact, most of them have been concentrating on Competitive Intelligence (called “veille stratégique”). Some have claimed being studies about Economic Intelligence but were only observing practices of Competitive Intelligence [Colletis-Salles 2001, CRCI Midi-Pyrénées 2002, DARPMI 2000, Hassid et al. 1997, Phanuel and Levy 2002].

The problem is that the French government is promoting Economic Intelligence (which is broader than Competitive Intelligence, as demonstrated in part 2). The national policy and most training programs are about Economic Intelligence. France has a Senior Director in charge of Economic Intelligence (HRIE: *Haut Responsable chargé de l’Intelligence Économique*) as “the control and protection of strategic information relevant to all economic actors” [HRIE nd, author’s translation]. Secondly, and more recently, by the Senior Director in charge of Economic Intelligence (HRIE: *Haut Responsable chargé de l’Intelligence Économique*) as “the control and protection of strategic information relevant to all economic actors” [HRIE nd, author’s translation].


Another approach, a functional approach, was first used by Clerc [1995] to define the concept of Economic Intelligence. Clerc took up the definition of the Commissariat Général du Plan, and then specified that Economic Intelligence “extends the different actions related to Competitive Intelligence and the protection of assets, by including influence strategies and the cultural factors linked to each business and each region. Three main functions characterise it: developing and perfecting scientific and technological property, detecting opportunities and threats, elaborating influence strategies in the interests of the nation or of the business” [Clerc 1995, author’s translation].

This functional approach was also taken and developed by Harbulot [1995] or Levet et Paturel [1996]¹, but had never, as far as known by the author, been the object of an empirical work. However, it is worth to seriously consider it, given that beyond its theoretical interest it has real educational and pragmatical value: [Massé and Thibaut 2001]. Furthermore, for some methodological reasons, as will be explained in Part 3, there was a need to operationalize the concept of Economic Intelligence. The functional approach fit perfectly with this intention.

Therefore, a decision was made to follow the path chosen by Clerc and to approach the literature by asking: “What does Economic Intelligence do or what does one want to do when implementing Economic Intelligence?” (i.e. “what are the functions of Economic Intelligence?”). To answer this question the method followed was to study the definitions and approaches of around forty authors², mainly French. Three main categories of answers i.e. three functions of Economic Intelligence were identified. This establishes a distinction between Competitive Intelligence and Economic Intelligence.

2.1 The Intelligence Function

Of course, the reason why this function is useful to companies is not different of what can be found in Competitive Intelligence researches. It is obvious that companies have not free access to all the necessary information³, and that information is partial and not evenly balanced, or asymmetrical, between the different parties [Raimbourg 1997]. Uncertainty is, therefore, inevitable, but organisations seek to minimise it, notably by using the intelligence function. Reducing incertitude comes down to anticipating the changes in the environment, as far as possible, in order not to be met by “strategic surprises”, in other words, unexpected, unfamiliar and possibly harmful events [Ansoff 1975]. This means eliminating these harmful, unexpected and unfamiliar characteristics regarding future events, to anticipate threats or to be ready to make the most of opportunities.
Competitive Intelligence is, therefore, fundamental to decision making. That is why authors on the subject make of Competitive Intelligence the key point of Economic Intelligence. It can be a source of competitive advantage, by changing the balance of information to the profit of the firm gathering information [Grandval 2000].

The process is cyclical and includes four stages: direction, collection, interpretation and dissemination [Baud 1998].

2.2 The Information Risk Management Function

This function marks a difference between Economic Intelligence and Competitive Intelligence. Effectively, Competitive Intelligence is an informative process that includes gathering and analyzing information in an offensive manner, but does not play a defensive role.

Massé and Thibault [2001] define four types of protection: Mechanical (monitoring access to the firm or parts of the firm), logical (IT security), human (internal and external: protecting against “fake” interns, increasing employees’ awareness of information value), and legal (confidentiality, intellectual property, patents, non-competition agreements).

Information Risk Management is applied both to intentional and accidental threats. The first relate to security and counter-intelligence, while the others, according to the dual notions proposed by Geiben and Nasset [1998] relate to safety – putting preventative and reactionary measures in place to counter accidental exposure to risk.

Overall, Information Risk Management aims to maintain or even increase the asymmetry of information to the advantage of the business using it. It is also carried out in four stages: an analysis of the information risk (identifying vulnerable areas of the business and of external threats, evaluating their probability relating to competition, and the potential impact on the business), dealing with information risk (elimination or reduction of the risk), administration of the information risk (transferring risk, voluntary retention, forced retention), and monitoring (updating recuperation plans).

2.3 The Influence Function

Influence is characterised by its indirectness, that is, by the exclusive use of information as a means to cause someone to act in a certain way, whether or not they are aware of the process.

Thus for Baumard [2000], influence strategies consist in implementing a series of indirect pressures on the influential individuals/businesses in the market, most
of the time its regulators, in order to maintain or gain a competitive advantage.

In a way, Influence and Competitive Intelligence are symmetric processes. Competitive Intelligence handles information concerning the business environment which is injected into the decision making process of the business. Equally, Influence consists in injecting information into the decision making process of organisations belonging to the business environment.

Influencing practices can be understood as a refusal to accept the environment as a constraint, and its rules and laws as final. Furthermore, a company that uses influence has “nonmarket strategies” [Baron 1995], meaning it acts within its social, political and legal environment.

Lobbying is a particular example of influence. It acts to influence the process of drawing up, applying and interpreting legislative measures, standards, regulations and, more generally, decisions taken by government [Farnel 1994]5.

In the competitive field, Baumard [2000] proposes a conceptual framework of managing competitive signals. Signals sent deliberately enable businesses to influence competitors, persuading them to change their position, and misdirecting or discouraging them. Once again, this means maintaining informational asymmetry to the advantage of the business: the greater the imbalance of information, the more inactive the competitor [Baumard 2000]. The aim of influential strategies in the area of competition is to exploit the imbalance of information in a discrete manor: the more indirect the method, the more effective the strategy given that this does not create resentment and preserves the legitimacy of the company [Baumard 2000].

Influence is, itself, a cyclical process made up of three stages: determining the needs of the business, shaping or packaging the information and circulating it.

In conclusion to this section dedicated to the definition of Economic Intelligence, let’s not forget it consists in three informational functions: Competitive Intelligence, Information Risk Management and Influence. They allow a company to manage the balance of information, aiming to modify this balance to the advantage of the business that practices it. Thus they give a competitive advantage – more so than Competitive Intelligence does, which only aims to gather, interpret and disseminate information.

3 Methodology

3.1 The field of the study

The choice of SMBs as a research field corresponds to a strong trend in business studies. SMBs are multiple. In this study, small businesses are defined in terms of number of employees (10 to 250) but not from the point of view of share ownership. The choice to take into account “false SMBs”, i.e. those of which most of the shares are owned by another company, is based on a simple idea: Their exclusion would lead to ignore a large number of businesses that help make up the economic fabric [Goy 2000].

Furthermore, considering the initial doubt expressed in this study regarding the existence of Economic Intelligence in SMBs, this variable was retained in order to determine if it is discriminatory.

Concerning the size of the businesses, this research followed the European standard that defines the upper limit of a small to medium sized company as 250 employees and does not include businesses with less than 10 employees [Marchesnay 1997].

However, within the framework of this work, only a part of the group of businesses considered as SMBs was studied. Bournois and Romani [2000] were effectively taken at their word in deciding to complement their study which looks at companies having more than 200 employees. The SMBs in this study have a
workforce of between 10 and 200 employees. They are located in the Rhône-Alpes area in France. They belong to the industry and the services sectors, excluding the commercial sector.

3.2 Expressing concepts
Establishing a link between concepts and data constitutes one of the most important and difficult stages in research [Thietart 1999]. It has been necessary to explore which type of data needed to be collated in order to apprehend the concept of Economic Intelligence.

It was believed that simply asking SMBs’ directors about Economic Intelligence would pose too many risks regarding people’s understanding. The concept is still very ambiguous, as said in Part 2, and the phrase Economic Intelligence is not widely known, particularly among smaller companies. This fact will be demonstrated by the results of the survey, which show that 56% of managing directors asked, couldn’t say whether they practiced Economic Intelligence or not.

The choice was made to operationalize the concept and measure it without the respondent knowing. To this end, Lazarsfeld’s method [1967] of measuring concepts in social sciences was mimicked. This method consists in dissecting a concept into its component parts (here, the three functions of Economic Intelligence), called facets or dimensions, before defining the indicators. These indicators are, in other words, variables that make possible the evaluation of the different parts of the concept.

Thus, an Economic Intelligence measuring scale was developed.

3.3 Using a quantitative methodology
One of the objectives of the study was to evaluate SMBs’ possible practices of Economic Intelligence. A quantitative approach was chosen, basing the evaluation on statistical data drawn from a questionnaire. This was sent out to 1000 SMBs of less than 200 employees in the Rhone-Alpes region. 125 questionnaires were returned, 103 of which could be analysed.

The questions related to the three functional dimensions described above as well as a number of additional questions on what aids Economic Intelligence (network, organisation, technology) and on the characteristics and strategies of the businesses.

4 Main results
4.1 The empirical structure of information functions
The Economic Intelligence measuring scale was refined and validated by a Principal Component Analysis (PCA), followed by a Confirmatory Factor Analysis (CFA).

From an empirical point of view, the PCA summarises the information by replacing initial variables with a smaller number of composite variables, called factors, that are exact linear combinations of the initial variables. The CFA assesses empirical data against hypotheses on the structure of relationships between the observed variables and the latent variables or factors. It analyzes constructs validity.

The evaluation of the PCA results was carried out using indicators of the quality of adjustment between the empirical data and the six models tested (AGFI, GFI and RMSEA). The reliability of the model retained was evaluated using the Cronbach Alpha statistic. The variables kept are presented in table 1.
### Table 1 Refined Economic Intelligence measuring scale variables

<table>
<thead>
<tr>
<th>Code</th>
<th>Variable</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSECT</td>
<td>Competitive Intelligence of the specific environment</td>
<td>You keep yourself up-to-date with what happens in your sector (suppliers, clients, competitors etc)</td>
</tr>
<tr>
<td>VINT</td>
<td>Competitive Intelligence of the strengths and weaknesses of the company</td>
<td>You monitor the strengths and weaknesses of your company (scale of frequency)</td>
</tr>
<tr>
<td>SENS</td>
<td>Awareness</td>
<td>Your company is sensitive to the issue of the security of information</td>
</tr>
<tr>
<td>ANTECH</td>
<td>Anticipating technology</td>
<td>Your company anticipates changes and innovations in technology</td>
</tr>
<tr>
<td>ANTSECT</td>
<td>Anticipating the specific environment</td>
<td>Your company anticipates changes in your sector</td>
</tr>
<tr>
<td>ANTGLOB</td>
<td>Anticipating the overall environment</td>
<td>Your company anticipates changes in the overall environment (give a timescale)</td>
</tr>
<tr>
<td>ANTINT</td>
<td>Anticipating strengths and weaknesses in the company</td>
<td>Your company anticipates changes in the strengths and weaknesses of your business (give a timescale)</td>
</tr>
<tr>
<td>IIINF</td>
<td>Influencing institutional bodies</td>
<td>Your company attempts to influence decisions made by institutional bodies.</td>
</tr>
<tr>
<td>CLINF</td>
<td>Influencing local authorities</td>
<td>Your company attempts to influence decisions made by local authorities.</td>
</tr>
<tr>
<td>OIINF</td>
<td>Influencing international organisations</td>
<td>Your company attempts to influence decisions made by international organisations</td>
</tr>
</tbody>
</table>

A comparison of the tested models (tab. 2) showed that model no. 3 satisfied the condition RMSEA<0.05 (good fit) and GFI and AGFI close to or greater than 0.9 (good fit). It was also the only model which satisfied the condition RMSEA<0.05, and for which each indication was the best.

### Table 2 Change indices for the models evaluated

<table>
<thead>
<tr>
<th>Model</th>
<th>RMSEA</th>
<th>GFI</th>
<th>AGFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.103</td>
<td>.872</td>
<td>.793</td>
</tr>
<tr>
<td>2</td>
<td>.114</td>
<td>.875</td>
<td>.784</td>
</tr>
<tr>
<td>3</td>
<td>.047</td>
<td>.929</td>
<td>.878</td>
</tr>
<tr>
<td>4</td>
<td>.099</td>
<td>.879</td>
<td>.805</td>
</tr>
<tr>
<td>5</td>
<td>.092</td>
<td>.880</td>
<td>.807</td>
</tr>
<tr>
<td>6</td>
<td>.099</td>
<td>.879</td>
<td>.805</td>
</tr>
</tbody>
</table>

Therefore, model no. 3 was chosen as the empirical model for the information functions (fig.1).

![Figure 1 Empirical Structure of the informational functions](image)

*NB: for reasons of visual clarity, error terms are not included.*

The percentage of variance explained by the three factors model of Economic
Intelligence that was used is 65.4%. The reliability of the scale is good: Cronbach Alpha= 0.78 (tab. 3).

<table>
<thead>
<tr>
<th>Concept measured</th>
<th>Standardised Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticipation</td>
<td>.90</td>
</tr>
<tr>
<td>Influence</td>
<td>.63</td>
</tr>
<tr>
<td>Vigilance</td>
<td>.65</td>
</tr>
<tr>
<td>Economic Intelligence</td>
<td>.78</td>
</tr>
</tbody>
</table>

The model used shows that the empirical structuring of the information functions is slightly different from the theoretical approach developed in Part 2. The statistical analysis brings out three empirical functions (factors): vigilance, anticipation and influence. The importance of the initial variables in forming these factors is demonstrated by the correlation coefficients (loadings) between the variables and the retained factors (tab. 4).

<table>
<thead>
<tr>
<th>Concept measured</th>
<th>Anticipation</th>
<th>Influence</th>
<th>Vigilance</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTGLOB</td>
<td>.918</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANTSECT</td>
<td>.912</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANTINT</td>
<td>.847</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANTECH</td>
<td>.823</td>
<td>.368</td>
<td></td>
</tr>
<tr>
<td>CLINF</td>
<td>.789</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OIINF</td>
<td>.737</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IIINF</td>
<td>.734</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VINT</td>
<td>.307</td>
<td>.819</td>
<td></td>
</tr>
<tr>
<td>VSECT</td>
<td>.800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SENS</td>
<td>.693</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Anticipation corresponds to an anticipatory knowledge of the environment. It requires an active attitude toward gathering information and can be related to the notion of Competitive Intelligence (veille stratégique) as according to Lesca [1994].

Influence brings together variables that measure influence on international organisations, institutional bodies and local authorities. This function corresponds to the interactive dimension of Economic Intelligence described in Part 2. One of its roles is to use information to direct the actions of the different stakeholders of the firm.

The Vigilance factor brings together variables measuring the knowledge of the specific environment and of the strengths and weaknesses of the business, as well as a variable that measures the level of awareness of the problems linked with the security of information. Variables highly loading on Vigilance factor are the most passive items of the theoretical dimensions of Competitive Intelligence and of Information Risk Management.

The empirical structure is not too far from the theoretical structure. Indeed, even if the Information Risk Management function is reduced to its most simple idea, the functional dimensions of Economic Intelligence remain. Anticipation diminishes incertitude regarding future events, and is comparable to Competitive Intelligence. Influence retains its “non-market strategies” function and Vigilance promotes awareness of the existing, immediate environment and of the notion of information risk.

Above all, examining these components highlights an additional dimension that distinguishes them from each other: the level of activity on the environment.

Looking at Ackoff’s typology [1974], there are four ways an organisation can relate to its environment:

- Inactivity: an unawareness of changes in the environment
- Reactivity: the knowledge of an event leads to a reaction
- Pro-activity: anticipates changes and makes decisions before an event occurs
- Interactivity which is goes further than pro-activity by not only anticipating change, but also by putting pressure on the environment with a view to transforming it.

Influence clearly corresponds to Ackoff’s fourth level, interactivity, while anticipation corresponds to pro-activity, and vigilance corresponds most closely to reactivity (there is no complete unawareness of changes in the environment). This result also recalls Miles and Snow’s famous typology of four strategic types. Prospectors, analyzers, defenders, and reactors are classified from very aggressive to totally passive towards the environment [Miles and Snow 1978].

A grading, therefore, exists for the empirical information functions detected in SMBs. This grading depends on the attitude of the company towards its environment, and also carries an idea of inclusion.
Indeed, to influence an organisation, it’s necessary to have anticipated any threat it may present, and have decided not only to take action ahead of a potential threat, but also to have changed the environment to avoid the threat emerging, or to reduce the potential threat. Therefore, influence assumes anticipation.

In the same way, a business could not anticipate changes in its environment if it had no knowledge of its current state. The empirical analysis of Economic Intelligence functions, therefore, highlights the fact that information functions are distinguished by their level of activity in relation to the surrounding environment.

This conclusion doesn’t bring into question the idea that Economic Intelligence serves to protect, to gather information or to influence the environment, but the data collected shows that the structuring of informational functions is somewhat more complex.

### 4.2 Types of SMBs according to their informational practices

Starting from previous results, a classification (typology) was build and validated by a discriminatory analysis, in order to determine groups of businesses that use the same informational practices.

Three groups of SMBs were formed, each being represented graphically as a cluster of points in the space formed by the three axes, Anticipation, Influence and Vigilance, and whose centroids give position relative to these axes (table 5).

<table>
<thead>
<tr>
<th>Axes</th>
<th>Group 1 centroid</th>
<th>Group 2 centroid</th>
<th>Group 3 centroid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticipation</td>
<td>.56</td>
<td>.50</td>
<td>-.73</td>
</tr>
<tr>
<td>Influence</td>
<td>1.55</td>
<td>-.52</td>
<td>-.34</td>
</tr>
<tr>
<td>Vigilance</td>
<td>.36</td>
<td>.63</td>
<td>-.74</td>
</tr>
</tbody>
</table>

Group 1 has a positive centroid coordinate on all axes. These coordinates values are particularly strong on Influence and Vigilance. The results indicate influence practices, anticipation to the environment, and awareness of the existing environment and the security of information (vigilance).

Nevertheless, these are centred scores, and a positive “mark” doesn’t mean that the practice is definite, but rather that it is above average for the SMBs investigated. Therefore, the total scores must be examined in order to decide if the term Economic Intelligence can be used.

For the four anticipation variables, group 1 has an average of 3.5. The score 3 corresponds to anticipation over a period of one year and 4 corresponds to three years. Therefore, it is estimated that businesses in Group 1 have a medium term view of their environment. Consequently, it can be concluded that this is a group that anticipates change in its environment, whether technological, specific, general or internal.

For the variables relating to the scanning of the existing environment, these businesses scores an average of 4.5, and slightly more for technological intelligence at 5. This confirms that the directors gather information on their business environment either several times per year, or even several times per month, and that they keep themselves up-to-date with changes in technology several times per month.

Finally, for the variable related to awareness of information security, this group has a score of 4.7, which shows that the companies in this group believe themselves to be sensitive to this issue.

For the influence variables, group 1 has scores averaging between 3 and 4 for influence on local authorities, professional organisations and institutional bodies. This indicates that these businesses attempt to put pressure on outside organisations at least once per year. They also try to affect the decisions of international organisations at least once per year, or even once a month.

Their directors also believe that their business has the ability to influence the surrounding environment. However, in response to the proposition “Does your business have the means to affect the
decisions of government?” most do not agree.

Therefore it is concluded that the businesses in Group 1 do, indeed, take actions to influence their environment, even if their sphere of influence is only local (which is not surprising for SMBs).

In order to be able to qualify the policies of these businesses, the fact that they manage their information risk has to be verified. For this, scores obtained for variables other than those that evaluate awareness of this problem were used: Frequency of patent applications (BREVET), knowledge of external infringements on security (ATTAQ), "key-people’s" knowledge being passed on (HOMCLE) and the existence of security measures relating to information (SECU).

A test of the variance (ANOVA) identified a significant difference between the three groups for the variables BREVET, ATTAQ and SECU. The difference between the three groups for the variable HOMCLE was not significant. For this set of variables, the average scores for each group, measured using a scale of 1 to 6, are set out in table 6.

Table 6 Group scores for risk management variables

<table>
<thead>
<tr>
<th>Var</th>
<th>BREVET</th>
<th>ATTAQ</th>
<th>SECU</th>
<th>HOMCLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>1</td>
<td>2.27</td>
<td>3.18</td>
<td>4.23</td>
</tr>
<tr>
<td>2</td>
<td>2.13</td>
<td>1.87</td>
<td>3.42</td>
<td>3.76</td>
</tr>
<tr>
<td>3</td>
<td>1.51</td>
<td>2.21</td>
<td>2.58</td>
<td>3.74</td>
</tr>
<tr>
<td>Average</td>
<td>1.90</td>
<td>2.30</td>
<td>3.24</td>
<td>3.84</td>
</tr>
<tr>
<td>Significant?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

In order to eliminate the effect of the sector, a chi-squared test was carried out, crossing patent application and sector affiliation. It transpires that the variables are independent, which means to say that there is no significant link between which sector a business belongs to, and those that apply for patents. Thus Group 1 owns more patents than the others, and takes measures to protect information.

Furthermore, businesses in this group also claim to have been victims of security infringement. There is no theoretical reason why these businesses are attacked more than others, which leaves to assume that the gap between scores is explained by a higher awareness of their vulnerability.

Finally, analysis confirms that the businesses in Group 1 manage information risk.

Therefore, Group 1 puts together businesses that combine Vigilance, Anticipation and Influence, and that, moreover, manage risks linked to information.

Conclusion can be made, then, that this first group composed of 22 SMBs practice Economic Intelligence.

The reader should note that the scores used represent an average, and that the evaluation of the number of businesses practicing Economic Intelligence should be viewed with caution. Moreover, it is important to note that these are scores of a group, which implies disparities between one business and another.

Group 2 has a positive centroid for the factors Anticipation and Vigilance, and a negative score for the dimension Influence. This demonstrates that these businesses practice anticipative information gathering and vigilance towards the current environment and the security of information.

On the other hand, they do not interact with the environment, i.e. they do not practice influence. This is why these 38 SMBs are considered practicing (only) Competitive Intelligence. Their horizon of anticipation and the frequency of their intelligence activity (all types of intelligence included) are relatively similar to that of Group 1.

They are less sensitive to managing information risk and have only a few security measures in place. They own fewer patents and have never been the target of illegal activities, or, at least, do not know of such activities. They only rarely put pressure on institutional bodies and local authorities (least than once per
year) and never on international organisations.

Group 3 is made up of businesses that seem to practice neither anticipation, nor vigilance towards the existing environment and the security of information, nor influence. The scores seem to indicate that this group of businesses practice neither Competitive Intelligence nor Economic Intelligence. The horizon of anticipation does not go beyond a few months, and their directors keep up to date with what is happening within their business environment only rarely throughout the year. They are not particularly sensitive to the issue of information security and also admit to taking very few protective measures.

Therefore, these 43 SMBs were named Disregarders.

Furthermore, one could consider that the scores, calculated by the sum of coordinates on each dimension of a group centroid, indicate the level of informational practice (see "total" on figure 2).

This typology enables to conclude that Economic Intelligence does exist in SMBs. 21% of businesses with less than 200 employees use a combination of the three key dimensions of Economic Intelligence, even if prudence means highlighting the necessary precautions linked with average scores. 37% of SMBs that responded practice Competitive Intelligence and are relatively anticipative. Finally, and surprisingly, 42% of SMBs that responded seem to observe their environment very little.

To end the presentation of our results, figure 3 image the three groups of small businesses. Groups are represented in a space defined by axes Anticipation and Influence. Each circle has a surface area proportional with the size of the group.

To comment these results, additional data will be used.

5 Groups’ description

In order to better describe Economic Intelligence practices among French SMBs, additional data about their use of networks and information technologies, and their organization will be exploited. Data not presented herein are available on request to the author.

The evidence shows that companies doing Economic Intelligence need to use each of these in specific ways.

5.1 Economic Intelligence: A reticular, original and frequent practice

The examination of
variables relating to the idea of exterior networks (relational networks) demonstrates that the exchange of information with other business leaders, collaboration with local authorities, international organisations and institutional bodies (CCI in particular – French Chambers of Commerce) is strongly linked to the practice of Economic Intelligence.

To explain this more fully, should be noted that the directors of businesses that practice Economic Intelligence (Group 1) exchange information with other directors that are not competitors several times per year, or even per month. Their relationships with professional organisations are carried out with nearly the same intensity.

Company directors that practice Competitive Intelligence (Group 2) consult their counterparts slightly less often than their colleagues that practice Economic Intelligence, and are much more infrequently with professional organisations (once or twice per year).

In businesses that practice Economic Intelligence, directors work closely and relationally with their competitors, institutional bodies or local authorities, at least once per year, and a little less often with international organisations.

Those that do Competitive Intelligence exchange information with competitors at the same rate, but relate much less with public organisations (one or fewer times per year on average) and work very rarely with international organisations.

An interesting fact becomes visible when the scores for all the network variables are added: it appears that directors who practice Competitive Intelligence (Group 2) and the one who can be classified as Disregarders (Group 3) have a score far lower than those who practice Economic Intelligence (Group 1). The difference between those who practice Economic Intelligence and those that practice Competitive Intelligence is great.

Now, if it is considered [Julien 1997], that a director’s personal network is their principal source of information, then these figures should be similar, since the two use a similar method of gathering information. Yet this is not the case. However, another function of Economic Intelligence is “networks consuming”: Influence. Not only the network helps a manager to collect information, but it is also a place to give information to stakeholders. This might possibly explain the difference in the intensity of the use of networks by companies who practice Competitive Intelligence and those who practice Economic Intelligence.

5.2 Economic Intelligence and Information Technology

The analysis of the relationship between belonging to one of the SMBs groups coming from typology and some variables measuring the use of Information Technology shows that SMBs that practice Economic Intelligence are more likely to use technology than other SMBs.

There is a visible difference in the use of an intranet to circulate information internally and in the use of information management softwares. Businesses that practice Economic Intelligence use tools that are more sophisticated than their counterparts.

This result is not surprising: It is clear that Information Technology is one of the most important facilitators for Economic Intelligence in SMBs [De Vasconcelos 1999].

5.3 A Participative Approach

Firstly, results show a significantly more important involvement of employees in gathering information among businesses that practice Economic Intelligence. This result supports the traditional Intelligence saying: “information is everyone’s business” [Karger 1991].

Secondly, practicing Economic Intelligence is positively linked to the participation of managers, employees and other people (bank personnel, consultants etc) when carrying out a strategic
diagnosis. Economic Intelligence involves a more participative strategic approach.

Lastly, the strategic visions of directors are shared better in SMBs than they are advanced in terms of informational practices. This results is consistent with the DARPMI [2000] report on the pilot operation aiming to introduce Economic Intelligence in SMBs. It is told in this report that having specific projects shared with the personnel facilitate the appropriation of the approach.

6 Discussion

How can the results found in French SMBs be explained? Traditional contingency factors, then strategies, were examined as potential explanations. Data not presented herein are available on request to the author.

6.1 Questioning Economic Intelligence contingencies

French studies, dedicated to SMBs or not, generally focus on Competitive Intelligence, and show that this correlated with the size of the firms [Bournois and Romani 2000, CRCI Midi-Pyrénées 2002, Phanuel and Levy 2002].

The statistic analysis, which looked at the size of the organisations in relation to the practice of Economic Intelligence, is not statistically significant. Furthermore, although businesses that use Economic Intelligence seem to be among the largest in terms of workforce, this isn’t the case in terms of sales.

Yet, if the businesses that practice Competitive Intelligence and those that do Economic Intelligence (Groups 1 and 2) are put together, and if a means comparison test (t-test) between this meta-group and the group of Disregarders is carried out, the following result appears: The size, whether measured by sales or size of workforce, becomes significantly different.

On the other hand, a comparison test between Group 1 and Group 2 does not show any significant difference. Size seems to be a particular criterion that enables to estimate the information gathering activity of the business, but from this to real Economic Intelligence is not a question of size.

Concerning ownership and sector, it was found that they are not significantly linked to Economic Intelligence either.

Finally, contingency variables are not relevant to explaining the use of Economic Intelligence among SMBs. However, these variables would possibly have a larger impact if the study were to investigate a more varied group of companies (SMBs and large companies). The relative homogeneity of the survey’s sample in terms of sector and size (10 to 200 employees) is likely to limit the impact of the contingency factors used.

But it is still possible to establish a relationship between size and disinterest in practicing any type of Intelligence. Economic Intelligence is probably used by specific types of business. It is not simply that smaller businesses do not practice Intelligence. There must be another explanation, which is the reason why strategies were studied.

6.2 Economic Intelligence, a matter of strategy

Quite surprising results indicate that size, ownership and sector do not play a part in whether SMBs practice Economic Intelligence or not.

However, certain elements of firms’ strategies can, at least partially, explain this practice.

In particular, it was found that SMBs doing Economic Intelligence had a more international dimension than others. Not so much in terms of exports, but more in terms of competition encountered, whether this be across boarders (international development), or in France (the nature of competition). This can be explained by the level of complexity (perceived or real) that international competition presents, and that requires an investigative, or surveying, approach. An “international” environment
can be harder to understand than local or national competition.

Moreover, the study of Porter’s generic strategies carried out by SMBs gives us an unusual result: Economic Intelligence is linked, among SMBs, to three specific strategic manoeuvres: differentiation, focus strategies and diversification. These are manoeuvres that require businesses to more opened on their environment than cost domination. The relation between Economic Intelligence and strategies is probably bi-objective. On the one hand, they are empowered by the advantages offered by an Economic Intelligence system, and inversely, Economic Intelligence can be made necessary by the choice of these manoeuvres.

Finally, when attempting to find explanations to the observed situation, we agree with Wright et al. [2002] and Tarraf and Molz [2006] on the idea that the practice of Economic Intelligence in SMBs depends on the attitudes, perception and personalities of the decision-makers at the companies. Some of them see Competitive Intelligence as part of strategic decision-making, whereas some others feel that having a Competitive Intelligence activity is mostly for followers, not for leaders, or even as a waste of time and resource. The training of managers could also be an explanation [Larivet, 2006].

7 Conclusion

Beyond numbers and figures, what must be taken from this chapter, is the fact that Economic Intelligence is practiced among French SMBs. This practice is defined, above all, as interactivity with the surrounding business environment, which, in particular, consists in such businesses influencing local authorities, governing bodies and organisations, but also commercial and sometimes international organisations. This interaction is accompanied by anticipation of advances and changes in the environment in the medium term, and ongoing vigilance towards current changes taking place. Furthermore, using Economic Intelligence in SMBs means paying attention to the security of information, not only by being sensitive to the issue, but by taking measures to protect a business and by being aware of its vulnerability. In other words, by managing information risk.

Thus Economic Intelligence is not only a French concept: It is also a real business behaviour, which needs to be studied, as well.

In order to improve the adoption of Economic Intelligence, training programs should be generalized in business courses, but any form of action that might increase decision-makers awareness would be useful.

Regarding what aids businesses that practice Economic Intelligence, it is essentially the use of relational networks, a participative management and quite sophisticated Information Technologies. This leads to another important conclusion: These are the skills and tools that training programs and the French government should focus on.

And last, but not least, when trying to understand why some companies do Economic Intelligence and others don’t, it is obvious that strategies have a greater explanatory power than the usual contingency factors. Public and private policies aiming to develop Economic Intelligence should take it into account, and further surveys also.

Notes

1. Levet and Paturel [1996] have added the coordination of strategies to the functions described by Clerc. We have not kept this as, in our opinion, this generally goes beyond the framework of Economic Intelligence in terms of what literature reveals. Furthermore, the practice of Economic Intelligence is not always carried out in a collective and concerted manner (such as in a situation of economic war between two companies).
2. The number of authors that have given a definition to Economic Intelligence is greater, but several of them use previously existing definitions. Original and non conventional definitions were favoured, until reaching a saturation point.
3. Or rather, they have so much information that it is difficult to reach what is really useful. In the end, sourcing good information becomes expensive.
4. In the greater sense.
5. Quoted by Décaudin [1997]
6. Quoted by Thiétart [1999]
7. One might think that certain sectors are less concerned with creating patents, for example, the service sector.

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Competitive Intelligence and Strategic Governance Issues
for French Groups of Mutual Banks Facing the Financial Crisis

Dr. Denis Malherbe
CERMAT / Université François Rabelais (Tours, France)
denis.malherbe@univ-tours.fr

Département Management / Systèmes / Stratégie
ESCEM (Tours-Poitiers, France)
dmalherbe@escem.fr

Abstract
This introductory research paper presents a conceptual framework for enquiry and analysis regarding the contributions and limits of competitive intelligence approaches to the strategic governance of French groups of mutual banks. Originally organised as networks of territorial retail entities, these banks were set up under the institutional control of their membership. However, over the last decade, most of them have followed the mimetic trend for mergers and become global competitors in sophisticated finance operations such as asset management and credit reinsurance on the derivatives market. For this reason, French mutual bankers have evolved from network structures to group structures with central entities at their heads, under the legal form of public listed shareholding companies. Until 2006, such changes in strategy and structure were commonly considered as legitimate and successful practices within the banking and finance industries, because they always held the promise of high returns for their operators. However, since 2007, the effects of the US subprimes crisis on global finance have revealed the threat that these practices represent for bankers. Despite the numerous similarities of dedicated analysis techniques, credit rating assessments and regulation requirements as compared with CI instrumentation and principles, it is obvious that environmental risks were miscalculated and internal vulnerabilities were underestimated. French groups of mutual banks, and the mimetic strategies they followed in the 2000s, do not represent an exceptional case in the present harsh circumstances, as will be discussed in this paper through an examination of the Caisse d’Epargne Group and the Banque Populaire Group. Both of these mutual operators are now in the red, owing to the heavy losses of Natixis, their joint-subsidiary in corporate and investment banking.

Accordingly, the change in the strategic activities and central structures of mutual bankers leads practitioners and researchers to first question the processes of environmental mimetism among competitors in a strategic arena. But it also requires more than generic statements about strategic intelligence failures in the banking and finance sectors. It calls for an analytical reflection on the specific biases inherent to an internal corporate governance structure where control of strategic choices was captured by top-managers and financial experts to the detriment of the principles of members’ ownership. In this respect, neo-institutionalist, structurationist and conventionalist theories offer interesting perspectives for understanding the considerable contributions of CI to the dynamics of strategic governance. A CI approach must take a wider view than that provided by the usual prism of informational engineering, i.e. it can be
improved by a comprehensive analysis of the actors’ cognitive processes and socio-political behaviours.

**Keywords:** Competitive Intelligence, Corporate Governance, Mutual Banks, Global Finance, Securitisation, Mimetism, Structurationism, Conventionalism

“French banks might possibly be bought out but they are not at all exposed to this danger because they are very watchful about risks. (...) As a mutual bank and, as such, absent from the (buy out) market, I don’t see how the CNCE (Caisse Nationale des Caisses d’Epargne) could be coveted”

Charles Milhaud, as Chairman of the Caisse d’Epargne group’s Management Board, in a hearing before a commission of members of the French Parliament, on October 7, 2008, before he was dismissed by the CNCE’s Supervisory Board on October 20, 2008

“The extension of standardized management practices (to mutual and cooperative companies) sometimes tends to erase some of the main features of democratic governance.”

François Marc [1984]

“We must speak and act as if things that have proved themselves in the past could prove themselves again today or tomorrow; as if communication were not improbable; as if constructing a consensus in a normal manner did not raise any problem.”

Günther Ortmann [2004]

**Introduction**

The subprimes and securitisation crisis which developed during the year 2008 affects all financial companies in the world. Today, in many Western countries, mutual companies and groups are major competitors in the banking sectors. Their strategic position makes these operators particularly interesting because of the tensions in their corporate governance between their institutional specificities and their role in the competitive and sophisticated circuits of globalised finance:

- On the other hand, as nowadays they compete on equal terms with their commercial rivals, they tend to implement ever more technicised strategic management policies, which are broadly common to all operators in the financial sector.

Traditionally established in the retail banking industry, operators with a mutual status have, for around ten years, been making their presence felt in the global financial markets. But the momentous upheavals in international financial markets during recent months and the predictions of an economic recession for the year 2009 are now adding their decisive effects to these structural developments. These transformations thus raise questions concerning the place of Competitive Intelligence (CI) tools and approaches within the governance and management practices of mutual banking and insurance groups:

To which extend can CI contribute to the strategic governance of mutual banks? Or, a contrario, what would be the consequences of applying insufficient or unsuitable CI approaches to their governance?

Do CI principles and instrumentation apply to financial competitors, whether or not one takes into account their respective forms of governance and internal functioning, i.e. their having mutual or public listed statutes?

Do CI and mutual governance constitute separate categories in managerial dynamics, related to different objects, temporalities, logical criteria
and levels of decision-making? Or, on the contrary, do they represent complementary - even interlinked – dynamic aspects of the same strategic ability and responsibility?

At this stage, this paper does not aim to bring definitive answers to these questions. Rather, it aims to investigate and improve the formulation of such questions within the field of management science research. With this intention in mind, its aim is to throw light on some of its significant operational and conceptual dimensions, in order to study them further within the scope of future research projects. The analysis will be more specifically centred on French groups of mutual banks. To this end, a five-part plan has been adopted, dealing successively with:

1. An overview of the main characteristics of French mutual banks: historical origins and organizational development over recent decades, institutional specificities of governance and current strategic management practices;

2. A general review of the role and value of CI approaches and their logical procedures for the management of companies’ competitive advantages and for the establishment of efficient modes of development within their strategic environment;

3. A presentation of the case of Natixis; the relatively new corporate and investment banking joint-subsidiary of the 2 major French mutual banking groups (Caisse d’Epargne and Banque Populaire); founded in late 2006; this French public listed company – and consequently its controlling shareholders – was adversely affected by the financial crisis in 2007 and 2008;

4. An examination of the questions raised by a critical understanding of CI cognitive and behavioural issues related to the strategic governance of groups of mutual banks. Based on the conceptual views of neo-institutional, structurationist and conventionalist theories, this discussion leads on to…

5. An attempted conclusion on the value and limits of CI approaches in relation to their implementation within the specific context of strategic governance in groups of mutual banks.

1. French Mutual Banks: historical development and current issues

Whether or not they operate in the fields of the banking industry, mutual companies are based on an original institutional model, which is supposed to integrate economic performance, social mission and democratic governance [Jeantet, 2006a, 2006b; Pfimlin, 2006; Lamarque and Alburaqui, 2007]. Being legally defined as groupings of persons - their members - and not as share capital companies, they escape the classic opposition between private companies with share-capital status and public organisations owned by the State or other public authorities [Glemain, 2006]. Major players in the development of the financial services sectors, their strategic governance presents dual features. Over the last two or three decades, their retail networks have offered both socio-economic proximity and comprehensive services while their central structures have become more and more involved in the sophisticated circuits of international finance [Gianfaldoni, 2007; Malherbe, 2008; Gurtner et al., 2007].

1.1. Mutual banks in France

Historical origins dating back to the social movements of the 19th century

Although – from a strictly legal point of view – they do not have mutual but rather cooperative status, savings and loans banks now constitutes another major sector for French mutual groups [Jeantet, 2006a; Rault, 2007]. Like many of their cousins in the insurance sector, these mutual groups stem from the historical institutionalisation of the socio-economic solidarity movements that developed during the 19th and early 20th centuries [Gueslin, 2002].
However, nowadays they are major competitors in universal banking, implementing their strategies not only on the national retail markets but also in the globalised financial circuits:

Originally established in local funds, the Caisses d’Epargne (French saving banks) were created from 1818 onwards in order to promote saving among the working class [Christen-Lécuyer, 2003].

Inspired by the German cooperative experience introduced from 1844 onwards by Friedrich-Wilhelm Raiffeisen, the Crédit Mutuel’s first local funds appeared between 1888 (in Alsatia, then part of the German Reich) and the first half of the 20th century, in other regions [Moulévrier, 2003].

The first Banque Populaire appeared in 1876 in order to offer short-term finance to craftsmen, commercial and industrial small and medium-sized businesses, and the mutual organisation developed its specific positioning during the 20th century [Albert and Gueslin, 1997].

Dedicated to the agricultural and farming world, the Crédit Agricole Mutuel’s operational structures arose at the same time within the framework of laws organising the activity of the local branches (1894), and were brought together a few years later within the structure of the first regional mutual fund for agriculture (1899) [Gueslin and Barral, 1984].

The current groups of mutual banks

As with any other commercial banking company, mutual savings and loans banks now offer a broad range of products and services. They operate under the general legal regulations covering credit institutions, defined by the French Banking Act of 1984, which put an end to the former specialisation of the French banking system [Paulet, 2005]. Mutual banking groups are currently organised in national networks, bringing together autonomous regional banks. Each one of these regional banks is built upon a collection of local institutional funds, officially managed by members.

Each mutual banking network is federated both nationally and internationally by a superstructure of one or two entities. One of these entities has technical (financial) duties and the other has a political purpose. These central bodies are subject to institutional control by the regional mutual banks’ members. They in turn control their own subsidiaries, dedicated to specific financial activities (asset management, real estate, leasing, private banking, factoring, insurance, foreign subsidiaries, etc.). This generic model applies to the four French mutual banking networks:

The Crédit Agricole mutual network consists of 39 regional banks and more than 2,500 local funds. All of these are connected through the FNCA (Fédération Nationale du Crédit Agricole), the representative body, and Credit Agricole SA, the group’s actual financial body.

The Crédit Mutuel group is organised within a structure comprised of the 18 confederations of regional banks of the Crédit Mutuel Agricole (not to be confused with the Crédit Agricole mentioned in the preceding paragraph) and their subsidiaries.

Similarly, 18 regional Banques Populaires and three other CASDEN mutual banks (dedicated to teachers), Crédit Coopératif and Crédit Maritime Mutuel are brought together under the group “Banque Fédérale des Banques Populaires”. In turn, this federal body of the Banques Populaires network participates in the listed Natixis SA company, an institutional investor created at the end of 2006 as a corporate and investment banking joint venture with the Caisse d’Epargne group.
Stemming from 440 local savings funds, 28 regional Caisse d’Epargne are the majority shareholders of the Caisse Nationale des Caisse d’Epargne, the central body of the network, set up with the status of joint-stock company. In addition to its role as political head of the network, the CNCE also exercises technical functions as the group’s financial holding company.

Major operators in the French banking sector

As with the mutual insurance companies, the mutual banking groups have also undergone spectacular strategic changes over the last few decades. Organised into financial groups, they now have leading positions in a number of segments of the French banking system and among the clientele (private individuals, freelance professionals, small or medium businesses and non-profit organisations). On the French markets, these four mutual banking groups currently attract more than 60 % of deposits and finance more than 40 % of loans, while their distribution structures comprises the largest part of the network of commercial retail banks throughout the country [CEGES, 2007; CECEI, 2008].

Having gone far beyond retail banking’s traditional limits, they now play an important role in the globalised capital markets, which causes their interests and structures to follow the logic of financial management to an ever greater extent [Roux, 2002]. Accordingly, during the last decade, some of them took control of important competitors such as commercial banks and/or finance companies.

In 1998, the Crédit Mutuel Group bought out the Crédit Industriel et Commercial Group (CIC).

In 1998, the Banque Populaire Group bought out the corporate and investment Natexis Group, itself resulting from the merger carried out in 1996 between Crédit National and Banque Française du Commerce Extérieur (BFCE).

In 1999, recently endowed with the legal status of cooperative credit institution, the Caisse d’Epargne Group took over control of Crédit Foncier, a specialized operator in mortgage operations.

In 2002-2003, the Crédit Agricole Group launched and won its friendly takeover bid for the large commercial bank, Crédit Lyonnois, which has been renamed LCL. Crédit Agricole and LCL are now building up the Calyon group.

In late 2006, Caisse d’Epargne and Banque Populaire came together with the creation of Natixis SA, a joint-venture integrating their specialized structures in strategic activities such as corporate and investment banking, asset management and financial services.

In 2007, the Banque Populaire Group acquired Foncia, a real-estate service company, and in 2008 it acquired 7 regional banks previously owned by the British commercial group HSBC.

In the early weeks of 2009, the Crédit Agricole Group (mutual) and the Société Générale Group (commercial) announced their plan to create a joint venture in asset management [Les Echos, 2009-01-09].

Finally, during the same period, a majority of French mutual banking groups developed their activities in the insurance market. As a result, an interlinking of strategies is increasingly prevalent between mutual bankers and insurers, sometimes in the form of strategic cooperation but also, in other cases, in the form of real rivalries between operators in these two major financial sectors.

1.2. French mutual banks facing renewed strategic challenges

Several analogies between mutual competitors in the banking sector can easily be made on the basis of this general description, even if differences in the
scope and depth of these similarities are to be noted. Accordingly, on the basis of their institutional forms as well as their development history and their current operations, these common trends essentially concern issues of strategic positioning and governance in a more competitive and sophisticated strategic environment.

The relativisation of a governance model

Most of the French mutual bankers had similar origins in local, regional and/or socio-professional contexts. Set up several decades ago, these companies took root in the territorial proximity and/or professional community of specific socio-economic movements. Their independence is often based upon the demands of collective management of sectional interests (farmers, craftsmen, small industrial and commercial entrepreneurs, civil servants). Nowadays, these historical origins explain the fact that they usually mention specific principles of democracy and solidarity in their official line. But obviously, it must be remembered that, within the various different companies, such signs may indicate anything from simple institutional image to effective governance and management practice.

Broad targeting development strategy and external growth

French mutual bankers all underwent remarkable strategic development during the second half of the 20th century, as they faced up to their direct competitors, the born and bred commercial companies, and worked towards the attainment of critical size [Lacoue-Labarthe, 2003]. Indeed, they successfully participated in the growth of national markets, based on the need for provision of financial services within the framework of territorial structures [Richez-Battisti and Gianfaldoni, 2007]. Moreover, many of them very actively expanded their strategic boundaries from their traditional membership to new customers won over from the general public of private individuals and small or middle-sized businesses.

Crossing paths between mutual competitors in the insurance and banking sectors

All of the French mutual bankers were involved in a broad movement of intersector-based diversification and competition within the framework of the bank-insurance industries in the 1980s-1990s. Certainly, a strict legal divide between institutional structures managing banking and those engaged in insurance activities was imposed by the European authorities. However, it is obvious that all of these mutual operators have developed strategies of interlinked structures and skills. Some groups chose the path of intersector partnerships (e.g. Caisses d’Epargne/MAIF/MACIF in 2005), some others chose to integrate both trades under a common holding structure (e.g. Crédit Agricole, Crédit Mutuel) and some others combined both of these approaches (e.g. Groupama).

From retail banking to universal banking: a visible trend towards standardisation

Over the last two decades, French mutual bankers joined the international movement towards industrial concentration in the financial sectors. This movement itself accelerated during the 1990s. Supported by the wide but not highly profitable resources provided by their traditional retail networks, several mutual groups established new development strategies, and as a consequence, renewed governance structures which are now openly oriented to gross banking and financial market activities.

More complex in their legal, economic and financial dynamics, these holding structures aim at playing an active role in the development of globalised finance markets (asset management, portfolio switching strategies, speculative trading, financial engineering...). Similarly, for around ten years, these same groups – the most important mutual retail networks – have tried to bring about takeovers of rival
commercial networks and/or to create technical subsidiaries on the other continents.

Finally, French mutual bankers have tended to become ever more commonplace competitors, subject to the increasing technical standardization of their context, jobs and practices. These major organizational changes affect their operational functioning as well as their internal management systems and their strategic and institutional governance [Mottet, 2002; Roux, 2002; Gurtner et al., 2007].

Hybridising the structures of governance?

Among the changes described above, one of the most visible and significant is the current hybridisation of the holding structures of some of the main French mutual groups under the form of public limited companies. On the one hand, the majority of the equity capital continues to be owned by the regional mutual banks [CNCE, 2008; Groupe Banque Populaire, 2008; Calyon, 2009]. On the other hand, a floating part has been opened to market investors. This kind of institutional change reflects the duality, even the managerial tension between two different strategic businesses (retail operations vs. financial techniques) but also between two differentiated sets of governance structures, rationales and ethics (satisfying members and stakeholders vs. satisfying shareholders) [Jensen, 2001; Ory et al., 2006; Batac et al., 2007; Gurtner et al., 2007, Malherbe, 2008].

It is therefore not surprising that over the last decade, French mutual operators in general have been deeply concerned by all the implications of the debate concerning the appropriate nature of their strategic alignment with their capitalist competitors [CECEI, 2008; Richez-Battesti, 2007]. Considered as real strategic opportunities by the top managers of some French mutual groups — such as the bankers Crédit Agricole, Caisses d’Epargne, Banques Populaires and the insurer Groupama — these changes are regarded as major threats to their vocation, purpose and principles of governance by the executives of other companies — such as Crédit Coopératif in the banking sector and MAIF, MACIF in the insurance sector.

Nor is it any more surprising that some of those mutual bankers and insurers who chose the competitive policy of alignment are now faced with decisive, even dangerous issues in the context of the current financial crisis [Crouhy, 2008]. They are standing “at a crossroads” [Pastré, 2007], oscillating between their purported historical mutual retail identity and their practised involvement in the search for financial performance in a competitive flat world [Gurtner et al., 2007;Gurtner et al., 2006; Malherbe, 2008].

2. Competitive intelligence in strategic governance: guidelines and techniques

Having provided this general overview of the French mutual banking operators, it is now time to define the major common characteristics of Competitive Intelligence (CI) techniques. According to experts in this managerial field, CI offers a wide spectrum of principles, methods and tools for guiding and optimising the practice of strategic management and governance in companies. What are CI’s main ideas and instruments for these purposes? What are the principal steps for the implementation of a global CI approach?

2.1. From better knowledge to a better understanding of the environment

Defining the company’s needs for better strategic information

According to its activity (-ies), any company operating in a competitive environment seeks to improve its strategic position vis-à-vis its customers, but also vis-à-vis its actual or virtual competitors, suppliers and other stakeholders. In this perspective, gaining a sustainable competitive advantage depends on the
ability to build an alignment between its position within the opportunities and threats presented by its strategic circumstances, on the one hand, and its capacity in coordinating its internal resources, competences and capabilities on the other [Porter, 1992].

Within this broad general view, CI principles firstly require the definition of the informational areas which need to be mastered in order to make the company governance as efficient as possible: economic branch, industrial sector, country aimed for export operations, public regulation authorities, existing competitors and possible partners, consumers associations, interest groups, etc. [Harbulot, 1992; Buysse and Verbeke, 2002]. This determination of the strategic informational area must neither be too limited, nor too wide. It must be flexible enough to take into account new circumstances or emerging obstacles [Besson and Possin, 2001].

Ideally, the determination of this informational area should be the result of a participative process involving the different parties concerned with governing and managing the company. It is currently considered that benchmarking analyses of equivalent foreign companies offer a good basis for the precise definition of the limits of this “cognitive field” to be mastered, notably in order to assess the company’s strategic responses to its various stakeholders’ value expectations [Buysse and Verbeke, 2002; Jensen, 2002].

Appreciating the environment’s level of complexity

However, necessity and ease of attainment are rarely synonymous. Prior awareness of this difficulty is a pre-condition that should neither be ignored, nor overestimated by top-managers and members of the boards in charge of strategic governance [Génélot, 1998]. In this matter, indifferent and inhibited attitudes constitute major hurdles that can adversely affect the effectiveness and efficiency of strategic decisions, especially in the case of small and medium-sized businesses [Guilhon, 2004]. Moreover, indifference appears here as one of the many biases related to bounded rationality in decision-making processes [Simon, 1955].

In addition to this awareness, the common principles of CI emphasise the importance of adopting an appropriate methodology in order to avoid pitfalls in the resolution of complex situations. For this purpose, it is necessary to design a general interpretation grid allowing the contents of the social representations that influence the decision-makers’ attitudes to be clarified. On the basis of this cognitive grid, the method then requires the building of a semantic map that can be shared as a common reference for data analysis and for the expression of the company’s strategic goals. This approach can easily be connected to the basic representation of the ant modelisation approach: modelling is firstly the construction of meaningful representations in the modeller’s and/or decision-maker’s mind [Le Moigne, 1999].

When these purposes are known and formally approved, the next step consists in implementing management by process and/or by project within the organisational structures. In this respect, activation of the networks linking the organization to its environment is here a condition of reliability: setting redundancy to ensure supplies, diversifying circuits of information and channels of communication with the clientele as well as channels towards the outer stakeholders, etc. In this perspective, CI principles also insist on the managerial effectiveness of developing autonomy throughout the organizational structure in order to arouse initiative and competitive spirit. Finally, the parties involved in the company’s governance and top-management are responsible for clarifying, as often as necessary, the sense, the meaning and the issues involved in their choices of action within the strategic environment.
Estimating the impact of disinformation and/or lack of information

Information has a competitive— even warlike — dimension. Nowadays, no company operating in competitive markets can escape the conditions of economic war. But as discussed in the previous paragraphs about awareness of environmental complexity, CI guidelines here aim to avoid both naïve optimism and paranoia. The parties in charge of companies’ strategic governance must constantly monitor and renew their knowledge of their competitive environment. Firstly, they need to accurately read the decisive signals given out by political, economical, social, technological, environmental and legal events and changes, as classically analysed in the PESTEL model [Johnson and al., 2005].

Some of these signals act as risk or threat indicators, and therefore can negatively influence their operational, if not their strategic performance in both short-term and long-term perspectives. Secondly, decision-makers in governance and strategic management also need to put policies in place to protect the company’s own key information from possible malicious or hostile infiltration. Here again, the CI approach clearly depends upon the decision-makers’ degree of awareness of the actual strategic challenges as well as of their own possible cognitive biases.

2.2. From better understanding to better action.

The organisation of strategic watch

In order to maintain and even develop the ability to accurately construe the signals sent out by the strategic environment, generic CI principles recommend the organisation of informational watch. This watch must be active in the different functions, processes, resources and competences involved in the strategic business (-es) [Jakobiak, 2006], and more precisely, in those functions, processes, resources and competences that play an essential role in both the external and internal value chain [Porter, 1992]. CI methods usually distinguish between:

- a technological watch unit: latest scientific and technical advances, setting up of new standards, instruments or processes, mapping of competitors according to their respective investments in research and development, etc.;
- a commercial watch unit: following-up customers and their ability to pay, identifying new prospects, managing distribution channels, commercial methods etc.;
- a marketing watch unit: market trends, positioning of present competitors and potential newcomers, development of competitive / brand shares, , assessment of brand and/or corporate image in the customers’ opinion, recognition of new needs, new products and services, break changes or innovations affecting customers’ behaviour, etc.;
- a purchasing watch unit centred on prices and tariffs, the suppliers’ financial health, assessment of possible partnerships and appropriateness or risk of sharing the development of new components, products or services, etc.
- a legal watch unit: changes in national or supranational laws, acts and regulations, jurisprudence, parliamentary debates etc.

and more generally, a competitive watch unit which first synthesizes the main opportunities and threats pinpointed by the previous specialized watch units, and whose aim is the assessment of their possible impact in terms of technology, finance and human resources as well as in relation to external competition and cooperation.

The common CI literature considers that the watch processes are based essentially
upon open information. They are aimed at recognising reliable and significant signals amongst the diverse information collected in the company’s strategic environment. This interpretation has its roots in experience and benchmarking [Marcon and Moinet, 2006], accordingly, in order to remain pertinent, competent watch requires not only frequent updating of its informational contents, but also, regular upgrading of its collection and analysis processes.

The implementation of knowledge management

Within the same perspective, competitive watch is complemented by knowledge management tools and methods. As mentioned earlier on many occasions, benchmarking is one of the main KM instruments. KM consists not only in a collection of technologies and applications but also in a well thought-out approach, relying on a managerial attitude of open-mindedness and communication [Balmisse, 2002]. KM’s first requirement is the ability to stimulate interest among the parties in charge of the company’s strategic governance and management. Then, once this attitude has been established, it consists in sorting and exploiting the selected information.

At this stage, the methodology follows the intelligence cycle, which is made up of the following elements [Lucas and Tiffreau, 2001]:

- free questioning and expression of information is needed in order to set up guidelines for the KM policy;
- building a research profile to collect interesting strategic information;
- exploitation of the informational contents through a sequence of cognitive checks, processing, analysis and synthesis;
- distribution and accumulation of knowledge (wide or restricted according to subjects and addressees).

Building a cognitively grounded strategic view

Possession of important information or knowledge is useless if this information or knowledge does not directly inform decision-making. The condition for success in this respect is that such information is able to penetrate into the decision-makers’ cognitive field, or in other — more direct — words, that the top-staff and those in charge of governance in the company are willing to accept this informational model as being significant [Génelot, 1998; Le Moigne, 1999]. In accordance with the classical design of managers’ roles, CI guidelines recommend that the board of directors and the executive managers should ensure that effective competitive intelligence strategies reach the majority of decision-makers within an organization. But there is obviously no miracle solution for obtaining an open-minded attitude among a company’s various functional and operative managers. As a matter of fact, the top-managers themselves are the primary and major parties that must be convinced of the relevance of such an approach. Because their cognitive orientation has a major influence on the construction of the company’s strategic view, in accordance with its principles of governance, and on its assimilation and implementation by all of the parties concerned by critical connections with the strategic environment.

Establishing a global and coherent strategic vision

According to CI authors, company strategic governance nowadays requires a global and coherent vision, based on CI methods and tools. Knowledge management and correlative benchmarking programs lead to a renewed appraisal of facts in a broadened sense. However, beyond this necessary but insufficient instrumentation, the top-managers and other officials in charge of the governance of the company must develop their strategic culture in a historical perspective, not only from a short-term and/or technical
point of view [Génélot, 1998]. The result is that the issues raised by today’s activity can be usefully read in the light of past events, in order to draw several lessons from them, significant to a comprehensive knowledge of the present and useful for the management of future developments.

However, in this perspective, once again, it is very much in the interest of executive managers and directors in charge of strategic governance that they become aware that their strategic vision of environment and resources is always conditioned by the biases of their cognitive prism [Johnson et al., 2005]. The rational prism postulates, for example, that strategic complexity can be reduced by appropriate technical knowledge and methods, such as the well-known matrices of the 1960s. Rigorously structured analyses lead to optimised strategic choices. Conversely, the empirical prism considers that individual and/or collective experience is the only key that allows efficient decisions to be made. Here, strategic choices in the positioning of the company and in the development of its performance do not rely upon making information explicit through formal techniques. They result in large part from the tacit subjective/inter-subjective knowledge that parties having responsibilities within the organization have assimilated while accumulating professional experience.

2.3. From better action to better management

Defining and protecting areas of vulnerability

Any company makes efforts to control the strategic resources on which not only its development, but more essentially, its survival depend [Pfeffer and Salancik, 1978]. For this reason, identifying environmental uncertainties in order to reduce them and to protect one’s vital resources is a major issue in strategic governance. CI can be implemented in a prospective or a defensive approach, respectively related to a prospective or defensive culture [Miles and Snow, 1978]. In both cases - but particularly for defensive purposes - the organization has to detect its own strategic weaknesses in comparison with the threats and risks of its present positioning and historical development. To reduce its weaknesses – in other words to lessen its exposure to these environmental threats and risks – the company needs a fair assessment of the situation, free from any naive or paranoid attitudes. But close involvement with action and operational issues often renders managers effectively incapable of conducting a critical analysis of their own practice. For this purpose, using the services of a specialised consultant can be a helpful practice.

Strengthening organisational reactivity and readjusting strategic planning

Following the example provided by servo-control systems, corrections must be applied as quickly as possible and provide appropriate responses to changes in the strategic environment. But here as in many common circumstances, acting quickly does not mean acting in great haste. Officials and executives must be able to develop organisational behaviour, based on collective learning and principles of autonomy. From this point of view, project management and process management techniques offer efficient ways of promoting a managerial culture, which enhances strategic reactivity and adaptability. Whether a company chooses a determined or emergent strategy [Mintzberg and Waters, 1985], its approach to strategic planning must include specific mechanisms for adapting to changes in its environment (recursiveness, iteration, etc.). In any case, this adaptive design approach to strategic planning must be the result of an active KM policy within and throughout the organisation.

Influencing the environment

One of the most significant transformations in the governance and
management of companies over recent decades has probably been the change in the representation and practice of power [Giddens, 1979, 1984; Mintzberg, 1989]. Instead of the classical conception of power, essentially normative and hierarchical, contemporary views of governance and strategic management tend to be based on the idea of acting through networks of influence. Besides relations of competition and agency, relations of influence constitute a significant lever for the improvement of a company’s position in the strategic arena, in relation to three categories of stakeholders: competitors, public authorities and other socio-political groups such as associations, trade unions etc. [Attarca, 2000]. Lobbying policy is a basic lever of this CI oriented conception of strategic governance and management.

This determination to influence decision-makers, both in the organization and in the environment, depends upon the ability to present them with the key factors needed for the analysis and resolution of a given problem, in accordance with the company’s principles of governance and strategic guidelines. In this context, it is a question of "searching, processing and supplying useful information to economic actors" [Mongin and Tognini, 2003]. Although this CI definition is partial, it seems adequate for taking into consideration a company’s connections of influence with its strategic environment. Business life and organisational life as well as social life are a network of influences [Mintzberg, 1983]. Some of these influences are consciously exerted by strategic actors, others are not; similarly, they may be partial or complete, regular or intermittent. Company strategic governance and management therefore needs to include a policy of influence, even a lobbying strategy.

3. The Natixis case: French mutual bankers in the financial turmoil

Natixis is a French corporate and investment bank, jointly created on 17 November 2006 by two French mutual banking groups, the Caisse d’Epargne Group and the Banque Populaire Group. Natixis SA is a public listed company set up following the merger of the former specialised subsidiaries of these two mutual banking groups, respectively Ixis Corporate & Investment and Natexis SA. Natixis SA now plays the role of a joint-holding structure that manages the financial activities of these numerous specialised subsidiaries and consolidates their results [Natixis, 2008a, 2008b]. At this stage of our research, the information and comments contained in the following pages are uniquely based upon available public sources (mainly official publications from companies and the economic press over recent years).


Natixis’ governance structure

According to the core shareholders’ founding agreement, the Caisse d’Epargne Group and the Banque Populaire Group together own a majority holding in the company (68.90%), each of them owning exactly the same proportion of the capital (34.45%). On 31 December 2007, the remaining 31.1% of the capital was owned by two European investors, DZ Bank AG (1.87%) and San Paolo Intesa (1.68%) and various other international shareholders (27.55% free float). In turn, Natixis SA holds 20% of the capital of its two main owners’ central bodies, Caisse Nationale des Caisses d’Epargne (CNCE) and Banque Fédérale des Banques Populaires (BFBP) in the form of preference non-voting shares [Natixis, 2008a, 2008b].

Natixis was created with the legal status of a French public company listed on the stock exchange. Under this status, the bank’s corporate governance is managed by an executive board composed of three members (executive chairman, chief executive officer and board member), assisted by an executive committee (11
managers in charge of the main functional activities). This governance structure is placed under the authority of a supervisory board of 21 members (chairman, 2 vice-chairmen, 15 members, 2 non-voting directors and a board secretary). Among the supervisory board’s 18 voting members, four people are chairmen or executives of large industrial or service groups. All other acting members are chairmen or executives in the central structures and regional mutual banks of the two owning groups: 7 belong to the Caisse d’Epargne Group and 7 others to the Banque Populaire Group [Natixis, 2008b].

The Caisse d’Epargne Group and the Banque Populaire Group are both large mutual retail bankers in France, operating in every French region, in the French overseas territories and, for some activities, abroad through foreign subsidiaries. They are also present in other banking activities through bought-out commercial competitors or through specialised subsidiaries positioned in technical segments.

The structures of governance of Natixis’ two core shareholders

The Caisse d’Epargne Group is currently comprised of 21 regional banks, which have been organised in the form of mutual banks since 1999, 80% of whose stakes are owned by local funds representing 3.5 million members. These 21 regional banks operate retail banking activities and services (private and professional clients) as well as regional development activities, such as financing companies’ management and investment needs as well as those of local authorities, hospitals, social housing associations etc.

The group has two central bodies: the Fédération Nationale des Caisses d’Epargne (FNCE) plays the role of the network’s political head, while the Caisse Nationale des Caisses d’Epargne (CNCE) acts as the federative financial holding structure, entirely owned by the regional banks. Moreover, the CNCE owns many subsidiaries in commercial banking in France and abroad (OCEOR, Crédit Foncier, Banque Palatine…), in the insurance sector (partnerships with mutual insurers like MAIF and MACIF), in real estate and the social housing services and, last but not least, in the global finance activities operated by the Natixis Group [CNCE, 2007; Natixis, 2008].

Established as a société anonyme à directoire under French law (stock corporation with a board of directors), the CNCE is administered by a five-member management board. The supervisory board of the group’s central structure is comprised of 20 members. 18 sitting members represent the Caisse d’Epargne regional mutual banks as the CNCE’s exclusive shareholders, and the two other voting members are directly elected by the network’s employees. The CNCE’s supervisory board also includes six non-voting members who have a consultative capacity. Among these members, two are from the network and the FNCE, one from Natixis, the remaining three are chairmen or top-managers from major external corporations [CNCE, 2007].

With a very similar structure, the Banque Populaire Group relies on a network of 18 regional mutual banks, two other specialised retail mutual banks - Crédit Coopératif (dedicated to the social and solidarity economy) and CASDEN (specialised for teachers) - and the joint mutual bank Crédit Maritime Mutuel. All of these operational entities are owned by a community of 3.4 million members. In turn, the 20 mutual banks own the common head structure, the Banque Fédérale des Banques Populaires (BPBP), on an almost exclusive basis.

Since 2007 the BPFP, the group’s central body, has been acting as a holding company, integrating many subsidiaries such as commercial banks in France: (Société Marseillaise de Crédit and the former French HSBC subsidiaries), finance service companies (Foncia), and also shareholding in foreign retail mutual banks (Volksbank International). Lastly, since
1996 the BFBP has held joint ownership of the corporate and investment bank Natixis, with the Caisse d’Épargne Group. The Banque Populaire’s various operational mutual banks are set up with French legal status of “société coopérative de banque”. Their corporate governance is organised with a chairman and chief executive officer, assisted by vice-chairmen. The board of executives is supervised by a board of trustees, elected from among the bank’s members (cooperative shareholders). The same institutional principles regulate corporate governance at BFBP level. Unlike the Caisse d’Épargne Group, governance is only open to chairmen and executive managers of the group’s central and regional structures [Groupe Banque Populaire, 2008; Natixis, 2008].

Natixis’ strategic activities and development

On behalf of its two majority shareholders, Natixis operates in five financial fields, the first two are oriented towards banking activities and the three others concern expertise in financial operations:

Corporate and investment banking including activities in coverage, capital markets, debt and finance.
Asset management comprising technical resources and competences dedicated to financial and real estate asset management.
Private equity and private banking bringing together competences such as operations in expansion capital, buy-ins/buy-outs, venture capital, private banking and wealth management.
A set of activities is grouped under the generic name of services, ranging from insurance, sureties and financial guaranties to consumer financing, employee benefit planning, payments and securities services.
Lastly, receivables management covering other specialised services such as credit insurance, factoring, business information and receivables management.

In many of these various activities, Natixis is a major player, not only on the French market but also in Europe and even worldwide [Natixis, 2008a, 2008b]:

At the end of 2007 for example, for corporate and investment banking activities, Natixis was ranked No. 2 worldwide in primary jumbo covered bond issues and No. 6 worldwide in aircraft financing.
Concerning asset management activities, Natixis was ranked as first operator on the French market, 5th in Europe and 13th in the world.
Similar rankings can also be found concerning service activities – with, especially, a position as leader in France for insurance and sureties/financial guarantees and employees’ benefit planning activities.
In its fourth strategic area of activities, the receivables management, Natixis appears among the world’s top ten companies with strong positions in credit insurance (3rd), receivables management (6th) and business information (7th).

With regard to this data, since its creation in late 2006, Natixis’ positioning and development stands out as a successful strategic experience in the globalised world of finance and gross banking. It could even be interpreted as a real success story in the joint-venture strategy managed by both of its majority owners, the French mutual banking Caisse d’Épargne and Banque Populaire groups.

Natixis security: a spectacular collapse

But this is the other side of the coin, the strong positions held by Natixis in its different activities are not sufficient to eclipse the collapse of the quoted price of its securities after their issue in late 2006.

Figure 1: Natixis’ quotations from 6 December 2006 to 30 January 2009
(source: http://www.natixis.com)
Figure 1 above shows the spectacular decrease in their market value over a period of almost 26 months following their issue on 6 December 2006 at a unit price of €19.55. The next day, capital amounting to €4.2 billion was raised, while the price per share reached €22.38 [Les Echos, 2007-12-07]. On 30 January 2009, the price opened at €1.17 and closed at €1.23 per share. In the meantime, the value of Natixis securities has therefore spectacularly decreased by almost 94% compared with their initial price. In October 2007, Natixis’ bad performance still placed it second in continental Europe [Les Echos, 2007-10-27]. Furthermore, over this period of more than 2 years, this major collapse could not be offset by the repeated capital contributions made by both of its core shareholders. The two mutual owners’ holding structures, the CNCE and the BFBP, successively provided direct joint-contributions of €1 billion and later of €1.5 billion to Natixis [Les Echos, 2008-06-27]. They also carried out a €3.7 billion recapitalisation of their subsidiary in September 2008, through the sale of 1.7 billion new shares at a unit price of €2.25 [Les Echos, 2008-09-22, 2008-10-07].

Despite these injections of money, Natixis’ financial situation has still gone from bad to worse, without its negative performances being offset, with registered write-offs in 2007 while it announced a net loss for the first nine months of 2008. This provisional €636 million negative result was caused by losses of €1.2 billion in corporate and investment banking—without here taking into account the consequences of Natixis’ involvement in the Madoff case in December 2008 [Les Echos, 2008-11-13, 2008-11-28, 2008-12-16].

Figure 2 shows the variations in the daily number of transactions on Natixis’ securities during the same period. It shows repeated intensification in autumn 2008. This can be explained in September by the recapitalisation issue, but on a much larger scale, by the brutal push in the hottest days of October, when the financial markets were under the pressure of the systemic risk threatening the global banking industry.

Facing the accelerated collapse of Natixis’ securities, the French authorities gave attention to Natixis’ difficulties. During 2008, the Autorité des Marchés Financiers (AMF) - the French market regulation authority - opened several inquiries relating to the depreciation of Natixis’ securities. In October 2008, the AMF set up an investigation on suspicious arbitrage behaviour among some of Natixis’ competitors during the recapitalisation operation carried out in September [Les Echos, 2008-10-01]. In the same period and for the second time that year, the French Parliament’s finance commission took an interest in Natixis’ situation and its strategic governance as well as in the involvement of its core shareholders, particularly, the Caisse d’Epargne Group [Assemblée Nationale, 2008b].
3.2. Underestimation of environmental risks in investment banking

The trigger: the ‘subprime crisis’

From a contextual point of view, the strong depreciation in Natixis’ securities can not be separated from the general downward trend on the globalised financial markets that became a panic movement, especially for securities in the banking sector in the autumn of 2008. Operating worldwide as a corporate and investment bank, Natixis was obviously affected by all of the effects of the subprime crisis in the USA and its financial difficulties were compounded by the severe problems resulting from the credit-bubble that developed in the US real estate market. The latter “had become disconnected from the general level of economic activity and was boosted purely by speculation” [Sapir, 2008]

The first environmental key-mechanism of this critical sequence of events has its roots in the aggressive credit strategies followed by many US banks on the housing market and was caused, or at least prompted by the low money-market rates decided upon by the Federal Reserve from 2002-2003 onwards. From the beginning of the decade onwards, US retail banking companies granted subprime loans to borrowers whose credit-worthiness was highly doubtful. They considered that the risk entailed by their high debt-to-income ratio could be offset, firstly by adjustable rate mortgages, and secondly, in case of default and foreclosure, by the positive effects of increasing transaction volumes and prices. Until 2006, housing-market prices rose regularly for many years and the community of financial operators hoped that they would continue to rise: that is to say bankers, investors, rating agencies and a majority of credit economists [Sapir, 2008, Crouhy, 2008]. 2007 revealed the surprisingly bad news when it was estimated that foreclosure activities affected nearly 1.3 million U.S. housing properties, an increase of 79% as compared with 2006 [RealTrac, 2008].

The second environmental key-mechanism affecting Natixis’ case was the accelerated securitisation of subprime mortgages, related to a technical process in the globalised finance markets [Sapir, 2008; Kohler, 2008]. This process was carried out in four stages based on the issuing of sophisticated securities known as ‘derivatives’ and ‘derivatives of derivatives’.

The amplifier: unsecured securitisation

In the first stage, credit institutions issued structured bundles of mortgage-loans called Mortgage-Backed Securities, including a proportion of subprime assets. MBS are a specialised kind of ABS (Asset-Backed Securities) credit derivatives. These credit derivatives were offered on financial markets to investors such as other banks, insurers and industrial groups. In the USA, the development of credit derivatives was so rapid that from 2006 onwards, it represented more than 75% of the subprime mortgage volume: 1,500 billion USD in 2002, 8,500 billion USD in 2004 and 45,500 billion USD in 2007 [Sapir, 2008].

Secondly, after 2005, in response to the increasing demand from international investors for high-return transactions, US banks applied a second technical solution by issuing “derivatives of derivatives” in the form of obligations called CDOs (Collateralised Debt Obligations) and later synthetic CDOs. A synthetic CDO is a structured credit product based on credit default swaps rather than physical debt securities. Derivatives of derivatives here play the role of coverage instruments [Kohler, 2008]. In simple terms, CDOs can be divided into three portions defined by increasing levels of risk: senior or super-senior, mezzanine and equity. Using the deregulation of globalised finance markets as a major strategic opportunity, many US bankers set up dedicated entities, both domestically and abroad, to manage the issuing of CDOs, such as Special Purpose Vehicles (SPV) [Sapir, 2008].
However, thirdly, ‘derivatives of derivatives’ were not considered to be sufficient in themselves to attract investors; as a consequence, credit enhancement institutions became involved in the securitisation process. Having appeared in the 1970s-1980s, credit enhancers are specialised US insurers, which ensure the timely repayment of bond principal and interest when an issuer defaults. They are commonly called ‘monolines’ because they originally exerted a sole line of business, in the case in point, providing bond insurance services to municipal issuers. In the 2000s, many credit enhancers ─ such as Ambac, MBIA, XL Capital, FSA, CFIG, etc ─ diversified their activities by offering guarantees to issuers of structured credit securities. For this purpose, they bought senior portions of CDOs estimated at 2,000 billion to 2,400 billion USD according to figures mentioned in French economic sources [Les Echos, 2007-12-26; La Tribune, 2008-02-13]. The final point about credit enhancers is that most of these US insurers followed the general movement of financial entities and transferred their company’s head offices to exotic settings such as Bermuda.

In the fourth stage of the process, owing to the guarantees subscribed with the monolines, the securities’ issuers took advantage of high ratings ─ such as AAA ─ granted by the well-known credit rating agencies like Standard & Poor’s, Moody’s and Fitch’s. Based on these rating procedures, the process finally came full circle when international investors and corporate and investment banks bought these structured securities [Sapir, 2008, Crouhy, 2008].

The loudspeaker: financial volatility and the IAS/IFRS ‘fair value’ principle

A third key mechanism should be briefly mentioned, although it will not be developed at length in this paper. This last environmental risk factor operates downstream and concerns the ‘fair value’ principle, a central feature of the IAS/IFRS accounting standards applicable in European countries. According to a vice-chairman of the IASB (International Accounting Standards Board), steady financial results for banks are not compatible with the essential volatility of financial markets [Le Monde, 2003-10-31].

In this way, companies’ assets and liabilities ─ and particularly those of the public listed banks ─ must be valued according to their exchange price on the financial markets. A technical standard of this nature, specifying the required book value, is not purely an objective and rational rule, as claimed in IASB communications [IASB, 2008] but is rather an institutionalised indicator of socio-economic convention, reflecting the socio-political process structuring modern financial capitalism [Chiapello, 2005]. Due to the ‘fair value’ principle, information on organisations’ economic activities and performance is currently centered on the shareholder’s financial view and interests, despite the appearance of references to the stakeholders in IAS/IFRS literature [Demaria and Frery, 2007]. Before the financial crisis, the question of fairness was almost solely of interest to researchers and auditors [Ernst & Young, 2005]. But since 2007, many investors and company managers have criticised the accelerating effect of the purely financial valuation of their companies [Le Journal des Finances, 2008-03-21; Les Echos, 2007-12-10]. Following IAS/IFRS rules, French banks such as Natixis and its owners’ central bodies were unable to avoid this intensification of their price depreciation and seem to have been harshly affected by this similarly underestimated risk in their strategic environment.

3.3. Natixis and its mutual core shareholders facing the crisis

From strategic euphoria to breakdown

A very large majority of financial operators ─ issuers, enhancers, rating
agencies and investors – shared the same confidence in sustainable economic growth in the US. Fed by what the operators considered as a rising trend on the US housing market, the globalised securitisation process seemed to be soundly built upon a double advantage: obtaining high returns on investments while benefiting from repayment security guaranteed by credit enhancers and assessed by the most famous rating agencies [Sapir, 2008, Crouhy, 2008]. But from mid 2006, the underestimated risks showed their effects with the slowdown, braking and, finally, collapse of the housing market, calling the mortgage lenders into question. Within a few months, a domino effect spread throughout the entire securitisation process, inducing a major crisis of confidence among operators. Security issuers, credit enhancers and investors suddenly became aware that they were not able to precisely estimate their exposure to the risks of excessive borrower indebtedness in a swinging housing market.

As a consequence of this domino effect; a Natixis expert stated in an international conference that an “unprecedentedly massive quantity of senior portions of subprime CDOs were downgraded from triple-A to junk within a short period of time” [Crouhy, 2008]

Natixis, CNCE and BFBP facing the monoline CIFG’s losses

As a result of the 2006 merger of the Banque Populaire and Caisse d’Epargne groups’ corporate and investment subsidiaries, Natixis held shares in CIFG, a US monoline company created in 2002, in which the Caisse d’Epargne Group had invested in 2004 through its dedicated entity, IXIS. CIFG ranked among the 8 major credit enhancers in the USA insuring structured finance, public finance and infrastructure transactions. CIFG’s structure was composed of CIFG North America, CIFG Europe - a monoline financial guarantee company operating in Europe – and, lastly, CIFG, a dedicated reinsurer set up in Bermuda [CIFG, 2002-01-07, 2002-06-01, 2003-02-26].

In 2006, the outstanding credit guaranteed by CIFG rose sharply, from 38 to 78 billion USD, exposing Natixis to the problems induced by the emerging subprime crisis [Mauduit, 2008]. In July 2007, Natixis decided to provide the credit enhancer with an additional 100 million USD in growth capital, claiming in a press release that this “injection of additional equity (...) demonstrates how satisfied we are with CIFG’s performance” [Natixis, 2007]. However, beyond the public relations claims, Natixis executive managers and those of both of its controlling shareholders, the Caisse d’Epargne Group and the Banque Populaire Group, seem to have become aware of the major financial risk in early 2007.

Although this was repeatedly denied by Charles Milhaud, when he was executive chairman of the CNCE [Les Echos, 2008-09-08; Assemblée Nationale, 2008b], the CNCE and the BFBP decided in late September 2007 to find a new buyer or investor on the international markets. However, the search proved ineffective because of the general decline in the financial markets and the very low attractiveness of credit enhancement entities in this critical context. Both of Natixis’ main owners were compelled to buy CIFG directly in November 2007 [Mauduit, 2008]. Having provided at that date 1.5 billion USD in capital support to buy out CIFG, the two French mutual banking groups became the credit enhancement company’s sole shareholders. Finally, despite the reminder by Moody’s, Standard & Poor’s and Fitch’s regarding the CIFG’s triple-A rating in its press releases [CIFG, 2007-12-21], the Caisse d’Epargne Group and the Banque Populaire Group had to deal with the difficult circumstances in which CIFG and Natixis found themselves. CIFG’s outstanding debts were estimated at around €70 billion in February 2008 and impacted
the continuous depreciation of Natixis’ securities prices [Assemblée Nationale, 2008a, 2008b].

Waterfall losses for the two mutual bankers

As described above (cf. supra 3.1), the two mutual banks’ successive attempts to provide new resources to Natixis itself did not succeed in halting the progressive collapse of their subsidiary’s securities [Les Echos, 2008-09-22, 2008-10-07, 2008-11-28]. For Natixis, estimated losses reached €1.2 billion for the first quarter of 2008 alone, without including the losses due to the Madoff case in December 2008 [Les Echos, 2008-12-16]. Under such circumstances, the corporate strategic and restructuring plan announced in May 2008 – involving 1,100 lay-offs of which 850 in France – was considered as insufficient by both shareholders [Les Echos, 2008-05-16, 2008], as stated by the CEO in March 2008: “Natixis is too small, too heavy, not reactive enough” [CFDT Banques, 2008].

Moreover and far worse, in late 2008, both mutual groups were exposed to losses in their respective central structures, although they made profits in their retail banking and real estate activities. These disastrous performances obviously resulted from their co-subsidiaries’ financial woes: Natixis in corporate and investment banking, CIFG in credit enhancement activities. The Caisse d’Epargne Group and the Banque Populaire Group were both in the red on 31 December 2008. The Caisse d’Epargne Group announced losses of €751 million for the first 9 months of the year [Les Echos, 2008-12-16] while the last known estimations at early 2009 were between 1.5 and 2 billion euros [Les Echos, 2009-01-22].

Owing to both banking groups’ interlinked ownership structures, their central bodies, the CBCE and BFBP, could – even should – compel their owners, the regional mutual banks, in 2009, to pay the consequences of the financial policies levered into place over the previous three years by empowered top-managers and experts, through their joint-dedicated entity Natixis. These consequences could/should affect technical, organisational and human resources thus reinforcing the negative institutional image of bankers in French society, even when they claim allegiance to mutual social responsibility. Finally, the global financial turmoil triggered by the US subprime crisis became, within a few months, an internal crisis of confidence within the Caisse d’Epargne Group’s governance. This led to the replacement of its chairman, Charles Milhaud [La Tribune, 2008]. It has also caused ongoing suspicion and political difficulties within the strategic negotiations concerning the strengthening of the two mutual groups’ partnership [Les Echos, 2009-01-09], after a long period where Caisse d’Epargne and Banque Populaire repeatedly insisted upon their joint desire for a merger of their central structures [Les Echos, 2008-10-11].

4. Competitive Intelligence, global finance and French mutual banks

Despite these waterfall recapitalisations, losses and write-offs, Natixis was relatively less exposed than other major players in the banking and insurance industries such as Union de Banques Suisses (about 38 billion USD) and Mervill Lynch (about 25 billion USD). However, an issue remains concerning the difficulty of distinguishing Natixis’ behaviour from that of its competitors. In fact, this difficulty can be dealt with through two types of questioning that are deeply intertwined with the Natixis case, which will be later pointed out and discussed separately, in order to facilitate conceptual examination and development:

In the strategic environment of corporate and investment activities, what was taken by the majority of competitors to be an unmissable opportunity in 2005-2006 has proven a bitter, not to say painful, example of miscalculation of risks in a misunderstood strategic
environment. To what extent can or could a CI approach help banking operators to identify, evaluate and manage the double-sided risks of their participation in the globalised finance markets?

The mutual governance origins of Natixis’ two majority shareholders, the Caisse d’Epargne and the Banque Populaire groups, seem quite obviously not to have carried much weight in the strategic analyses and decision-making processes. Concerning the particular hybrid structure of mutual groups of regional banks as both of Natixis’ owners, what specific factors should be taken into consideration for the implementation of a relevant CI approach? Which conditions should be better understood in order to comply with and serve the logic of corporate governance based on democratic principles?

4.1. Strategic intelligence in the arena of globalised finance: the risks of benchmarking in a mimetic world?

One of the internal origins of Natixis’ difficulties might be found in the relative lateness of its joint-creation by the Caisse d’Epargne and Banque Populaire groups. In March 2006, the top managements of the two French mutual banking groups announced their joint-decision to set up a strategic partnership between their central bodies. The underlying idea was and remained in the early weeks of 2009 the subsequent development of extended cooperation in many of their banking and services activities. Natixis was established in November 2006 as a co-subsidiary of the CNCE and BFBP and resulted from the merger of gross and specialised banking activities, notably corporate and investment activities such as asset management.

Neither the Caisse d’Epargne Group nor the Banque Populaire Group was an absolute beginner in financial markets. However, their respective experiences in direct strategic governance of gross-banking entities dated back to the end of the 1990s, i.e. at a time when they were relative newcomers in comparison with most of their national and international rivals. But in the mid 2000s, their top-managers aimed at becoming large-scale competitors in the opened channels of international finance. Consequently, they needed to focus their abilities and resources on acting globally or, at least on intercontinental operations between their French bases and the very attractive North American opportunities.

Caisse d’Epargne and Banque Populaire’s mimetic strategy

In the perspective of this paper, it must be repeated that such a merger strategy, centred on finance activities, was not particularly original when compared with observed behaviours which had already been standard practice for many years in the international banking industries, and more specifically, in the French mutual banking sector. In 2004, Crédit Agricole – the French leader in retail banking, which also has mutual origins – carried out a comparable merger, creating Calyon as a joint entity for corporate and investment activities, from its own Crédit Agricole Indosuez structure and the corresponding subsidiary of Crédit Lyonnais, the Banque de Financement et d’Investissement [Calyon, 2009].

With some latency, both of Natixis’ core shareholders joined the movement towards concentration of specialised structures, enlarging their operating capacity as international players in globalised financial competition. In making such strategic decisions, they followed the international crowd of bankers and insurers looking for opportunities to increase their profit levels. The main point here is not to question nor challenge the advantages that imitation of competitors offers to strategic players. Similarities in the definition and implementation of strategies are a very commonplace reality in many sectors, so
that it is possible to qualify these mainstream strategies with the adjective 'orthodox' [Johnson et al., 2005]. However, understanding the competitive alignments in a specific industry, such as banking, is not a question of mechanically copying the other competitors’ choices and behaviours. In general it is not even a question of following a rational strategy of imitation in order to reach their level of performance, unlike CI principles which advise the use of voluntary benchmark analyses [Harbulot, 1992; Buyssse and Verbeke, 2002]. The causes here can be found through an understanding of the attitudes of an individual competitor who wants to model his behaviour on that of his rivals. In this perspective, the search for reciprocal legitimation among competitors is a major issue that guides their strategic choices and which can be conceptualised in complementary outlooks.

A neo-institutionalist approach: mimetism as a strategic decision-making process

Firstly, from a neo-institutionalist point of view, convergent choices such as organising a joint-venture in corporate and investment banking, can be analysed as the result of isomorphic processes that can be, according to the circumstances, either coercive or mimetic or normative [DiMaggio and Powell, 1983]. In the case of Natixis, the setting up, the structural organisation and the positioning decisions on the markets were not the effects of strategic coercion, as in the case of agency relation structures [Jensen and Meckling, 1976, Jensen, 2001], for example, the outsourcing cooperation between a major assembly-manufacturer and its parts-manufacturers in the automotive sector.

The Natixis, Caisse d’Epargne and Banque Populaire groups are not only entities controlled by mutual banks. They are also players in the dual world of international bankers and investors, operating at the same time as strategic competitors and as institutional partners on the globalised finance markets. This duality of rivalry and interdependence is not only based on normative financial techniques and standards (normative processes) but also on a certain need to belong to a global flat and open professional community. Moreover, the hypothesis can be advanced that this need was particularly strong for French mutual bankers who had recently become directly involved in international circuits, whereas they were themselves products of the history of national retail banking.

In this way, mimetic processes exerted a major influence upon these bankers and investors. Like almost all of their major competitors and peers, Natixis, the CNCE and the BFPV top-managers and experts were obviously seeking high profits in the securitisation circuits. By following the crowd of these rivals and partners, they thought that they had found valid procedures and instruments for reducing the uncertainty of strategic decision-making in the complex environment of the finance industries. But on a much deeper level, they were possibly seeking professional recognition among their peers, the players of global finance. Such cognitive attitudes can act as a strong structuring feature in the managerial approach to strategic diagnosis. Strategic positioning and strategic design development are always related to events path-dependencies in the history of organizations and in the way their decision-makers think [Martinet, 2000].

Moreover, finance-oriented mimetism in the strategic governance of mutual banking groups is related to the theoretical debate about the embeddedness of economic and social structures [Polanyi, 1944; Granovetter, 1985]. In this view, according to their historical origins, French groups of mutual banks were institutionalised during the 20th century in the form of networks of territorial entities with democratic governance structures. Financial performance was embedded in their socio-economic vocation, placed under the joint control of regional membership and regional management.
From the 1980s/1990s onwards, the transformation of these networks into group structures came about with the emergence of a global self-regulated finance market. The representations and logical systems characteristic to the competitive environment moved from retail and territorial banking to gross and international finance markets. As an internal consequence of this displacement of external scope, financial performance became, within a few years, an uncritically accepted goal and a major competitive issue for the heads of central entities. Over a period of one or two decades, the mission goals of groups of mutual banks were subordinated to system goals in the flow of a socio-political transition [Mintzberg, 1983, 1989]. Mutual banking logic was now embedded within the framework of market dynamics. Competitive action and governance structure changed correlatively.

A structurationist approach: rules and resources, cooperation and influence

In a structurationist outlook, structure and action are linked by a double interaction loop [Giddens, 1979, 1984]. Social action is not possible without a supporting social structure that provides a framework for social relationships, behaviours and decisions. Social structure, in turn, must be understood as the result of the operation of social action within these relationships, behaviours and decisions. Strategic choices appear as significant actions instigated by individual actors — executive managers for example — acting within the framework of social structures (e.g. the head of a company and/or a market). In Gidden’s perspective, social structures’ properties consist of rules and resources. Taken in a general sense, rules have various forms, such as technical standards, social standards or common cultural values, for example, shared by players competing or cooperating in a professional context. Resources can broadly be thought of as economic and technical means, professional abilities and ability to influence. Rules and resources are both used by every agent in the production or reproduction of social life.

When one considers the strategic choices operated by the Caisse d’Epargne and Banque Populaire groups, in their relations with the financial environment, through their joint subsidiaries in corporate and investment banking and in credit insurance, mimetism can be understood as a very traditional process of social structuration. On the one hand, such strategic players as the CNCE and the BFPB brought economic and political resources to Natixis and CFIG, which mostly came from their retail banking structures (capital, formal governance legitimacy). On the other hand, however, their access to market activities and yields was basically conditioned by the need to adopt — perhaps to follow — the structuring codes in terms of financial techniques, regulations and professional behaviour. And these social codes were controlled by Natixis and CFIG managers and experts, in accordance with a common global community of reasoning and decision-making shared by the finance sphere’s operators [Godechot, 2001].

At a structural level, the interpretational approach is here very close to those of firm behavioural theory [Cyert and March, 1963] and agency relations models, whose designs are based upon informational asymmetry [Jensen and Meckling, 1976; Jensen, 2001, 2002] between two differentiated categories of actors within the organisational structure: top-managers and members of boards of directors on the one hand, analysts as members of a financial technostructure on the other [Mintzberg, 1983; 1989]. In a social action perspective, it can also be related to action theories such as socio-political [Crozier and Friedberg, 1979; Friedberg, 1993] and socio-regulationalist views [Reynaud, 1993; Sainsaulieu, 2003]. According to Giddens, strategic intelligence in finance market activities is a matter of structure and action. In other words, structure is
embedded in action and action is embedded in structure.

Strategic mimetism as a cause and effect of change in governance compromise

Control for some players and autonomy for others represented significant stakes in the internal influence games that structured corporate governance, in banking groups operating in the strategic environment of finance markets. On this basis, another hypothesis can here be put forward for interpreting the Natixis story. As long as securitisation processes based on US economic growth renewed development and performance opportunities, such stakes were heavy, but relatively non conflictual, and mimetism was a relevant attitude in this context within banking competitors’ corporate governance.

Like their banking rivals and partners and, broadly speaking, any of the French public companies listed on the Paris stock options exchange CAC40 reference, Natixis, CIFG, CNCE and BFBP were able to follow this common route and bet on short term profit gains, as if in a sustainable perspective, without questioning the relevance of these commonly recognised “good practices” to their strategic management and governance [Batsch, 2004; du Tertre and Guy, 2008].

In broad terms, governance actors considered their experts’ cognitive mediation to be a reliable and satisfying means of understanding and managing their choices in the complex, competitive environment of global finance. The joint-action of executive managers and finance experts at the top of these groups of mutual banks could thus be analysed as a typical expression of socio-cognitive and socio-political compromise, establishing the prevalence of financial logic in their strategic governance over the last decade. In a structurationist view, this governance compromise was both structuring and structured by their action in a competitive environment. Strategic choices in positioning, implementation of performance standards and risk management revealed not only the need, but also the will to conform to the prevalent competitive attitude in the banking and finance industries. Finally, the internal dynamics of the compromise were balanced in a traditional manner between the resource contributions, controlled by top-managers and directors, and the rules, mastered by the internal and external experts.

But in the case of Natixis, owing to the late founding of the company (2006) and the speed with which it was affected by the worldwide financial turmoil (2006-2008), such a view – one might even say faith – had become inappropriate to the brutal changes in the strategic environment. Nowadays, strategic foundation and legitimacy seem to be found more in low-return operational activities than in high return sophisticated finance circuits. As a significant example of this obligation to adapt Natixis’ strategic view to these disastrously changed circumstances, it is interesting to read the answer given, in early 2008, by the chairman of the bank’s board of directors to the question “Is the financial crisis leading you to change Natixis’ strategy?”: “It is truly a severe crisis (...) that will inevitably lead to strategic reappraisals among most operators, at least in order to take into account the changes in the competitive and regulatory environment. For Natixis, some adjustments must be made, but a certain number of our strategic plan’s main themes will not change. (...) Retail banking activities will continue to have a profound importance (...)” [Natixis, 2008b].

4.2. CI approaches and corporate governance in groups of mutual banks

During the last two decades, many of the main French mutual banking groups – such as Crédit Agricole, Banques Populaires, Caisses d’Epargne – chose to position their strategic development according to a renewed and ambitious business model. Briefly, the value equation depends on combining, on the one hand,
the solid but low return capacities of their commercial networks in the French retail markets and, on the other hand, the opportunities provided by participation in the highly profitable activities of globalised finance markets. From this point of view, strategic governance in the mutual banking companies is faced with a particularly complex environment, because of its duality. This environment is characterised by the juxtaposition of two major activities – retail and gross. Obeying their own specialised logic, these domains are also affected by the needs and constraints of their different geographical areas – local, regional, national and international – where different stakeholders act upon and influence their strategic choices and practices.

Integrating differentiated cognitive worlds

Moreover, the difficulty does not lie solely in the fact that these banking groups have had to combine different functional and geographical dimensions in their institutional and organisational structures. The complexity of this strategic change lies also in the fact that the cognitive conditions are not the same within these two differentiated professional worlds. The first cognitive world is structured in the traditional frame of territorial mutual banks. Management practices are here connected to a democratic governance structure, leading to the taking into consideration – even more or less partially and formally – of the demands of their membership and other stakeholders such as local authorities, for example [Richez-Battisti and Gianfaldoni, 2007].

The second professional cognitive world was discovered by French mutual bankers more recently, as a consequence of the deregulation and globalisation of financial markets from the 1980s onwards, as discussed in an Anglo-Saxon view of the common public company model, listed on stock-exchange markets [Hansmann, 1990, Hansmann and Kraakman, 1996]. In this world of corporate and investment banking and asset management, strategic management falls within the scope of shareholding governance, focusing its efforts on presenting the attractive image of a high-return competitor, professionally managed by reliable experts in finance techniques [Gurtner et al., 2007].

In this perspective, top-management teams and the directors and supervisors of mutual groups’ central bodies, have the advantage of having two specialised cognitive grids at their disposal, through which they can understand the corporate environment, one in each of these two strategic activities. Governance teams are assisted by experts from both strategic areas. From a conceptual point of view, mapping techniques can be adapted to the context of banking activities using appropriate methodology [Fourie and Schilawa, 2004]. But here the real and essential complexity remains in the building of meaningful concept mapping which is able to interconnect the respective views and logical systems of both areas into a coherent framework. Such cognitive mapping must also be capable of integrating the differentiated levels and logical frameworks of expectations that strategic decision-makers must face in this dual environment of retail and gross finance activities.

Beyond institutional governance

Here it is a matter of establishing suitable connections between an organisation’s structure, culture and strategic environment [Porter, 1992; Martinet, 2002; Cremadez, 2004]. Moreover, an essential issue is also the ability to reduce the cognitive distance, even the cognitive conflicts, between separate representations of performance among differentiated experts and decision-makers [Lawrence and Lorsch, 1967]. Going far beyond the institutional mechanisms of mutual banking groups’ ownership, this process of integration requires the ability to recognise risks in the practiced development path of a given corporate strategy such as:
strategic dependence or threats resulting, for instance, from the setting up of some technical operations such as financial partnerships or equity participations in other companies; structural or cognitive bias influencing the decision-makers behavioural choices, such as, for example, the bias of mimetism among the competitors in a strategic sector; and, more generally, inner-outer inconsistencies between the strategic governance model and the identity, values and principles guiding the group’s mission and management.

It should here be emphasised that French mutual bankers are obviously not alone in being exposed to such risks. Because these risks are broadly connected to large-scale strategic engagement in international financial circuits and markets [Crouhy, 2008; Kohler, 2008; Sapir, 2008]. However, their specific form of hybridisation between membership and shareholding structures and their theoretically democratic mode of governance impose upon them – ideally – the need for particularly accurate intelligence about the threats and opportunities in their strategic environment. The question is that of determining to what extent this desired or displayed ideal does or does not correspond to their effective strategic governance practices.

Beyond apparent similarities between financial risk analysis and a CI approach

From this point of view, a first obvious similarity with the generic CI approach (described above in part 2 of this article) concerns the importance of watch techniques [Marcon and Moinet, 2006] and vulnerability analyses related to strategic resources [Pfeffer and Salancik, 1978]. These systems act as functional watch units or KM facilities; their implementation offers obvious advantages for the strategic and operational management of such specialised activities as capital markets, coverage, financial and real estate...

According to its official Profile 2008 [Natixis, 2008a], Natixis’ pushed forward its leading position in French equity research and indicated that “Research commands strategic priority status” in the corporate and finance banking pole. It was asserted that its “Economic Research team (...) provides clients with a range of services including interest rate, currency and equity market analyses, economic and financial forecasts, country assessments and investment strategies. Some 40 countries are covered in total, including the main emerging countries”. The same document advanced reliability was based on sophisticated core competencies in the field of strategic, econonomic, financial and competitive intelligence. And it praised more precisely the qualities of its quantitative research practices supposed to be “geared to developing and maintaining models for valuing and managing the risk associated with financial products”. Natixis’ quantitative research was described as “the Bank’s technology watch” concerning the latest financial engineering developments” and was usually “used by traders and structurers”.

From an instrumental point of view, the techniques used are not very far removed from those recommended by the CI approach. The aim is to assess and control, as far as possible, a company’s strategic links with its complex environment through the implementation and use of dedicated intelligence techniques. But a second similarity can also be identified, which relates to influence processes, through which managers in charge of strategic governance can reduce obstacles and resistance to their outlooks and choices.

Because of their involvement in the complex play of globalised financial transactions and the establishment of their highly competitive position, several French mutual bankers and insurers invested in a number of technical instruments intended
to effectively monitor and evaluate their environment: economic studies of structural trends and present circumstances, financial risk analyses in accordance with financial regulation authorities’ requirements, such as those of the AMF in France, and various performance ratios in accordance with the rating agencies’ assessment criteria [Natixis, 2008b; Caisse d’Epargne, 2008; Groupe Banque Populaire, 2008].

Between intelligence techniques and communication practices

Like any of their international competitors, French groups of mutual banks collected, processed and disseminated apparently well-structured and well-argued technical information about their performance indicators and their exposure to strategic risks [Groupe Banque Populaire, 2008; CNCE, 2008; Natixis, 2008b]. In compliance with French regulations imposed by the AMF, a 10 page chapter (written in small type) in Natixis reference document 2007 sets out a wide range of potential but non-prioritised risks relating to its structures and activities [Natixis, 2008b].

8 items (2.5 pp.) discuss risks in the governance structure such as, for instance, the risk of disagreement between its controlling shareholders, CNCE and BFVP.

The other 21 items (7.5 pp) concern the different strategic activities. They list various issues ranging from the possible effects of “primary or secondary debt conditions on the financial situation and results” and “significant rate variations” – to put it plainly, subprime and securitisation crises and their consequences – to difficulties in upstream retail banking activities such as changes in French savings’ regulations and “the intensification of competition” [Natixis, 2008b].

This central financial communication is written in a traditional style but contains a curious mixture of highly popularised technical references and assessments exonerating management. Expressions such as “future events could be different from the hypotheses selected by Natixis top-managers”, “coverage strategies do not make the risk of losses insignificant” and “Natixis could be exposed to unidentified and unforeseen risks that could cause significant losses” [Natixis, 2008b] indicate a thinly veiled communication strategy intended to play down experts’ and top-managers’ responsibility [Roux, 2002; Batsch, 2004]. In other words, areas of vulnerability are mentioned, but levels of uncertainty, analysis criteria and impact measurements are not really made available to those who do not belong to the closed circle of experts and top executives. Furthermore, although this risk approach is included in the official documents, its presence is aimed not only at complying with the regulation authority’s technical requirements, but also at influencing external stakeholders by means of a well-polished communication exercise.

Even if in its present state, this line of investigation cannot draw upon internal sources, it is presumable that the instruments used in Natixis’ strategic governance were related to many CI techniques featured, at least partially, in their guidelines. As decision-making tools, these instruments fed, justified and/or reinforced the strategic views held by senior-managers and governance board members in charge of the Banque Populaire and Caisse d’Epargne groups’ central entities as well as Natixis itself. They may have played the same role in the governance structures of the Caisse d’Epargne and Banque Populaire regional mutual bank networks. The question here is to determine how and how far.

Without conducting interviews with the various parties involved and/or having access to what are probably highly confidential documents, no precise answer can be ascertained. Nevertheless, at the time of issuing this paper, some extensive information is fully available for the year
2007, but little concerning 2008, even on official websites. These open sources indicate that watch information in these banks also functioned as official top-down communication from specialists to non-specialists, from executive managers to stakeholders [Crouhy, 2008], as is usual in any bank, whether mutual or commercial. Under these circumstances, during the Natixis merger process and in the following months when share values collapsed despite successive waterfall capitalisation, the stakeholders ─ especially the basic memberships of both mutual groups ─ probably felt well informed and well protected against major risks by reliable executives and inner and outer experts.

5. Provisional conclusions: CI in the mutual banking industry, more than an engineering issue

From a general perspective, managerial practices can be characterised by the wide use of informational instrumentation. Informational instrumentation can in turn be analysed as a “form of investment” in the sense that its structure and contents are a mixture of formal features and socio-economic actors’ commitment [Eymard-Duvernay, 1996]. In the case of financial activities, information structures in environmental risk analyses are not only built in order to satisfy technical or normative requirements. They are also supposed to demonstrate how far strategic and technical competences are mastered at the head of the companies. They are therefore used for influencing some categories of shareholders in order to legitimise their strategic action closely related their financial performance.

This point is particularly important with regard to the value and limits of CI-related techniques in the specific corporate governance of groups of mutual banks. Mutual banks such as the French regional Caisses d’Epargne and Banques Populaires are officially governed by institutional processes of democratic ownership. However, their group structures are also mainly and broadly controlled by executive experts in the logic and temporalities of strategic management [Spear, 2004; Regnard and Gouil, 2005; Rousseau, 2007], not to say by shareholder-friendly logical criteria [Richez-Battisti and Gianfaldoni, 2007; Ory et al., 2008; Malherbe, 2008].

CI as a managerial attitude rather than purely technical instrumentation

As discussed above, from an instrumental point of view, the informational techniques used in banking strategy appear relatively close to those recommended by the CI approach. But in the general perspective of management science, the implementation and use of such technologies are never goals in themselves. Like any management tool or technique, their usefulness and performance are related to the context in which they are constructed and/or used [Moisdon, 1997]. From this general perspective, instrumentation never exists without the actors that implement and use it. As implementers, end-users and decision-makers, actors play socio-political games [Crozier and Friedberg, 1977; Friedberg, 1993] and position themselves around instrumentation within regulation processes, oscillating between logical frameworks of control and of autonomy.

Moreover, as in the case of any technology [Gouldner, 1976]; no managerial instrumentation can be considered to be independent from explicit or tacit underlying ideological models [Pesqueux, 2002, 2002; Alvesson and Willmott, 2003; Pezet and Sponem, 2008]. One of the main questions to be discussed concerning CI’s effectiveness and limitations relates to the contextual and organisational capabilities required for the integration and development of an agent-oriented approach to decision-making, which is both cognitively and socio-politically grounded.

Besides or even beyond technology and methods, organisational structure and
culture play a significant role in the process of KM implementation [Gold et al., 2001]. This cognitive dependence concerns the strategic view taken in corporate governance and is related to past success paths – e.g. business models of mutual retail banking. But it can also be an effect of other forms of dependence caused by the heavy technical specialisation that is a major feature of strategic financial activities. This double dependence has been particularly strong in relation to the actors, rationalities and temporalities that structure the levels and processes of strategic governance in mutual groups.

Within regional retail-oriented structures, governance results from coordination between institutionalised control by the membership and the executive management, but this articulation very often uncoordinated, owing to differences of legitimacy, rhythm and terms in strategic decision-making [Regnard and Gouil, 2005; Rousseau and Regnard, 2007; Malherbe, 2008]. At the level of mutual banking and insurance groups’ central bodies, most of the strategic decision-makers are members of two generic categories, top-managers (directors and supervisory board members) and experts in various financial techniques (in executive boards). The former sit in the governance structure, usually as representatives of the mutual retail companies they manage, while the latter belong to the holding’s central technostructure. If we consider this governance structure, mutual banking and insurance groups are no longer “mutual groups” but have often changed into “groups of mutual banks (or insurance companies)” [Batac et al., 2007; Gurtner et al., 2007].

Furthermore, if the question is considered here at the functional level of specialised financial activities, it again raises the issue of the juxtaposition of retail and market financial activities. The difficulty seems to lie in two points: how can one conceive a meaningful synthesis from functionally heterogeneous information? and how can one ensure coherence throughout the stages of the cognitive process aimed at producing this synthesis?

**CI, strategic integration and organisational / institutional coordination**

The first question concerns the ability to elaborate a CI system aggregating different functional dimensions linking the company to its double strategic environment, corresponding to its retail and gross activities. In the case of activities operated on global financial markets by groups stemming from mutual banks, the different types of functional watch to be coordinated concern many aspects such as:

- transformations of the macro-economic context [Sapir, 2008],
- the reliability of strategic partners and market trading [Williamson, 1985; Aoki et al.; 1990; Ring and Van de Ven, 1994; Kumar and Seth, 1998],
- the prudential policies followed by the public or private regulation authorities and similarly the procedures and requirements implemented by the assessment and rating agencies [Paulet, 2005; Gurtner et al., 2007; Assemblée Nationale, 2008b],
- technical innovations in the field of sophisticated financial instruments etc.

But once again, the difficulty concerns not only the well-known dialectics of organizational differentiation/integration [Lawrence and Lorsch, 1967]. It is also related with the logic of coordination and of control in and around organisations [Mintzberg, 1983, 1989; Nizet and Pichault, 1995].

**CI in strategic governance: representations and legitimacy issues**

The difficulty is more deeply rooted with regard to legitimacy practices [Weber, 1921]. Legitimisation is a basic mission of managerial activity [Mintzberg, 1989; Laufer, 1996]. Moreover, it consists in
connecting strategic management and corporate governance [Suchman, 1995; Malherbe, 2008]. In a closely related perspective, managerial activities, like governance practices, depend upon the attainment of a meaningful understanding of the complex environment in which they are positioned and act. [Weick, 1995; Autissier and Benseba, 2006].

Ideological justifications [Boltanski and Thévenot, 1991; Eymard-Duvernay, 2006; Pesqueux, 2000, 2002], professional imaginary and organizational fictions [Levy et al., 2003; Ortmann, 2004] here play a major role. They ground the strategic decision-makers cognitive representations of their environment, discriminating between what is symbolically right and wrong. In the same manner, they also structure their control levers around economic resources such as their ability to influence other social actors and actors through institutional regulation channels and/or relationships of domination [Giddens, 1979, 1984; Crozier and Friedberg, 1977]. From this perspective, as in the case of any managerial activity within an organisation, CI can legitimately contribute to strategic governance if it integrates cognitive formal rules, appropriate social norms and values and shared meanings into a coherent design [Scott and Christensen, 1995; Scott, 2001].

CI contributions viewed as the results of social construction processes

Concerning the ability to construct a CI system aimed at collecting, producing and sharing significant strategic information, the second question is therefore related to the presupposed cognitive continuum in the course of the successive stages of the "intelligence cycle". Procedural integrity here constitutes the central issue in the CI approach. This integrity alone permits the transition from a preliminary expression of informational needs to a final distribution and capitalisation of expected results towards the targeted addressees. However the actors involved in the intermediary steps of collecting and analysing information are seldom the same as those concerned with the upper and final steps of the process.

In the particular case of strategic governance within groups of mutual banks, this issue is at the crossroads between standardised logical frameworks of technical management and principles of membership governance [Marc, 1984; Spear, 2004; Malherbe, 2008], at least at the two institutional levels of regional and central entities [Richez-Battesti and Gianfaldoni, 2007, Cadiou et al., 2006; Gurtner et al., 2007]. For example, within the regional banks of mutual networks, executive managers share some aspects of strategic governance with elected representatives of the local membership. However within the same mutual banking group’s central body, corporate strategic governance is exercised over retail and gross activities by top managers and the board of directors, both of whom are informed and advised by experts and specialised managers, mainly originating from highly qualified financial functions.

Beyond their different roles, all of these actors in charge of the governance of the central entities are very close to the shareholding logical schemata, not only in accordance with their own interests—as representatives of institutional investors, for instance—but also due to their international financial culture as banking executives, technical experts, internal actors such as financial managers, economists and external actors such as rating agencies. As a matter of fact, cognitive and socio-political gaps probably separate these different categories of actors’ informational needs and strategic representations, as is explored, for example, in a number of comprehensive sociological and administrative studies on French retail banking marketing people [Courpasson, 1995; Cadiou et al., 2006] and finance market traders [Godechot, 2001].
The remote echo of Panurge’s sheep

Finally and ideally, the main issues concerning CI contributions to mutual banking groups’ strategic governance depend to a great extent upon the actors’ cognitive and behavioural attitudes and interactions, and not uniquely upon instrumental and methodological techniques. In the perspective of this paper, these cognitive and behavioural abilities are based upon the progressive construction of a sustainable governance and performance convention [Gomez, 1996] that articulates principles of legitimacy of democratic control and technical responsibility within a shared strategic view [Malherbe, 2008]. Because of the complexity of the strategic environment, this convention does not have to be reduced to the formally applied institutional mechanisms of purely representative governance. Furthermore, because of the underestimation of strategic risks by experts structuring both a mimetic competitive arena and an overconfident professional community, it should not be reduced to the passive and utilitarian duplication of rivals’ choices and behaviours.

The Natixis misadventure that has been briefly discussed in this paper illustrates how far French mutual bankers like the Caisse d’Epargne and the Banque Populaire groups went astray from this second strategic alternative. Attracted by the compellingly sophisticated and profitable world of finance that governed economy and society during the last decade, they broke their conventional links with their regional mutual banks’ logical schemata of governance. Following the mainstream of their rivals, they built up a new convention, founded on the paradoxical connection of the principle of competition with the practice of mimetism. Perhaps the top-managers and financial experts who took control of strategic governance at the head of these groups forgot the famous metaphorical story of Panurge’s sheep, written in the 16th century by the French author François Rabelais: “Suddenly Panurge threw his screaming and bleating sheep into the sea. All the other sheep, screaming and bleating in the same way, began to jump into the sea. They rushed forward so eagerly that each of them attempted to jump in front of the other. (But) it was impossible to save them from jumping because, as you know, it is in the nature of sheep to always follow the leader, wherever he goes.”

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Writing cases as a knowledge capture process in a competitive intelligence program

Monica M Mallowan*, Christian Marcon**
*Department of Management
Université de Moncton New-Brunswick
Canada
monica.mallowan@umcs.ca

**ICOMTEC
Université de Poitiers
France
christian.marcon@univ-poitiers.fr

Abstract
Students in Competitive Intelligence (CI) programs submit a report following their internship in an organisation. It is proposed that the result of their experiences be shared with their peers, in the form of cases written for in-class analysis. A knowledge base is thus created, which gradually becomes the program’s memory and, by its constant renewal and connection with the reality, the most useful teaching tool for the professor.

Keywords: Case study, CI program, guide, knowledge base, writing case study

1 Introduction
In 1996, the Institut de la Communication et des Technologies Numériques (the Communication and Digital Technologies Institute - ICOMTEC) of the University of Poitiers created the first French Competitive Intelligence (CI) postgraduate program. Previously structured as a one year training program, it was expanded into a two-year professional training program. For twelve years now, one initial batch of students followed by two subsequent others, have annually realized their internship in CI and have elaborated their master’s thesis on the basis of this informational raw material.

The first step in capitalizing existing knowledge contained in these theses has been achieved through the development of a database readily accessible by all students. Invited to consult this collection, a journalist from the daily newspaper La Tribune has written an article noting the richness and value of this first “real life” test in CI, where organizations are seen from the inside, beyond statements of principles and synthetic essays. Consulting documents in their integrality within this large collection, however, can be a trying exercise, lacking in a user-friendly, attractive dimension, hence, limiting the pedagogical utility to the individual effort.

Casting dissertation abstracts online was not deemed conclusive: most organizations proved unfavorable to having either internship-related work-content or even the topics of the assigned missions showcased on the web. It was therefore no longer possible to make the
The diversity of this work available outside the Institute.

The attempts to circumvent the obstacles challenging the previous experiment gradually articulated themselves around a logic of case writing as the single best tool of knowledge capitalization, insofar as the designing process around which it is built observes strict and rigorous scientific parameters.

2 Problem

Standing at the confluence of such scientific fields as information sciences, communication, management, economics and information technologies, the CI [Bloch 1999; Martinet and Marti 2001; Marcon and Moinet 2006], as an academic program at ICOMTEC, whilst certainly benefitting from classical teaching methods seeking to enhance acquisition of theoretical knowledge through lectures, case studies, readings, evaluations, etc., must pay special attention to learning by doing, taking the form of either internships that students are called to undertake at the end of each academic year or sponsored professional projects or contributions to Junior Enterprise. Internships, usually varying between sixteen to twenty-four weeks, are mandatory and lead to the drafting of the master’s thesis, whose objective is to bring students to elaborate upon the mission they were assigned and the solution they were called to design, in order for them to further address topical problems experienced during the internship and integrate these to the CI model, in an exercise of placing into perspective the specific knowledge of the profession.

Despite the richness and abundance of specialized literature examining different angles of CI – background, concepts, methods, tools, perspectives, etc. – the relative youthfulness of this academic field can partly explain the absence of a true fundamental manual in CI, which can be testified by the narrowness of the collection of pedagogical texts available to students during their training. Most authors, indeed, write either deliberately for practitioners in the field, with the concern of presenting them with “good practices” in CI, or, ever so rarely, for academics, in order to evidence the possibility for the CI to become a real discipline, subject to fundamental research.

Given this current general status of literary production, the necessity springs for enriching the specialized corpus of texts in CI, especially in terms of real, field experience, for professors and students to have access to teaching material reflecting the subject matter taught in class, as well as the multiple and concrete applications within the organization. Between the highly specialized topics examined by researchers in CI and the unavailability of the practitioners to write articles describing their professional reality, the students’ experiences may very well represent an important reservoir of evidence to be recorded under the form of cases, as valuable contributions to the literature fund with a vocation towards training. Through the case-writing process, student-trainees are able to report their professional experience, deliver learning material to their peers and contribute to the creation of knowledge base of specialized cases in CI.

In an era of changing paradigms, the transmission of this knowledge could represent a very important leverage factor in preparing the students towards achieving their internship and towards eventually integrating the labor market, in this highly complex profession.

3 Review of literature

3.1 The tacit knowledge

The contemporary organization, in its corporate, institutional or associative form, faces a crisis whose facets are multiple: economic, financial, energetic, managerial, to name only some of the areas facing increasing turmoil. It is necessary to add to these factors the current declining demographic trend which constitutes a crucial issue for several countries, considering planning with regards to
emerging workers and the need to secure transmission of the organization’s immaterial capital, such as acquired knowledge and the know-how [Blair 2002; Bourhis et al. 2004]. This know-how or knowledge is defined as “…the information that has been comprehended and evaluated in the light of experience, and incorporated into the knower’s intellectual understanding of its subject…”[ODLIS 2007] and it has a high impact on the enterprise’s competitiveness [Davenport and Prusak 2003; Nonaka and Takeuchi 1995].

This very context accounts for the interest that knowledge management has been arousing for some time amongst management specialists and from specialists of other fields as well [Moldovan 2005].

The authors insist on the difference between knowledge and information: when it is interpreted, utilized in action or in a process, the information becomes knowledge, which divides into tacit knowledge, on one hand, or the know-how, not expressed in words, represented by reflexes, automatisms, gestures and difficult to transfer because of its subjective, informal, contextualized and experiential character.

On the other hand, the explicit knowledge represents the knowledge expressed in words, formal, easily transferable orally or in writing, because objective, formalized, observable, conceptual and operational [Le Coadic 1997; Prax 2003]. Through using organizational knowledge (tacit and explicit) existing in structures and in processes, one either becomes competent or a holder of knowledge-to-act and able to solve problems, make decisions, act.

Managing knowledge, throughout the knowledge life cycle (process of creation, capture, formalization and capitalization of knowledge), gives the organization the possibility to build its capital of knowledge, composed of the experiences of the persons who work or who have worked there.

Nonaka [1994] analyzed the dynamics of the knowledge creation process: the socialization enables the traditional transfer of the know-how to someone else, the externalization covers the attempts to explain to someone the knowledge and the know-how. He adds to these mechanisms the internalization, which allows for the explicit knowledge to be internalized or embodied and for the combination or connecting of the explicit knowledge in order to generate new knowledge.

Prax [2003] and Dalkir [2005], among others, identify several methods of tracking or capture and capitalization of the tacit knowledge, methods that hold our attention because of their relevance to our aim, which is to find a manner to facilitate the transfer of the experience acquired by the trainees during their internships and the utilization of these texts in the analysis exercises in class.

From all the tacit knowledge tracking and capture methods identified by these authors –storytelling, imitation of gesture, apprenticeship, brainstorming, mind mapping, role-playing games, metaphor, images, drawings and videos, we can retain the method of the storytelling of a real-life situation, which is closest to the presentation of a professional experience through the technique of case-writing, and the method of the corporate memory or corporate repository. These two methods will be adopted in order to launch the project of conception of a knowledge base dedicated specifically to the case study in CI, a first of its kind in France.

The narration may be written (tale, drama, novel) or oral (description of an event, anecdote, etc.). The knowledge management is interested in the storytelling because it can transfer tacit knowledge. It is difficult, however, to extract the sense which contains the most important elements for the organization.

The extraction of the hidden sense contained in a narration demands an
analysis of this narration, especially of the following components : context of the action described; the plot of the story (the events described in their causal and temporal structure, the actors, the interaction); the steps of the problem solving (plan, sequence, etc.). The relevance of the narrative depends on its proximity (temporal, spatial, cognitive, emotional, of action and of interest) with the receivers (other members of the professional community or the staff of the organization).

The formalization of knowledge through the corporate repository method is highly effective in building knowledge bases wherein content can range from generic knowledge, acquired through education, to contextualized knowledge, acquired as a result of the study of a problem, a file, or a topic. These knowledge bases can take many forms: references, case or project repositories, economic and professional information, patents, records of experience, glossaries, directories, repositories, visual documents, technical reports, best practices, cases, procedures, guides, manuals, etc. In setting up these knowledge bases, certain criteria must be taken into consideration, such as the features of the target audience, the value of information, the goals, the codification and validation level, the editorial board, etc.

It is therefore from within the category of tacit knowledge that we must take the CI professional experience of students into account. Hence, the usefulness of capturing this knowledge under case form, thus, facilitating its transfer, on one hand, while enabling this knowledge, on the other hand, to become the organized content of the knowledge base: the “accumulating sum of knowledge on which the advance of a particular industrial sector relies, including not just codified knowledge but also tacit knowledge and knowledge embedded in plant and equipment” [Grand dictionnaire terminologique 2009]. The main objective of this case study base is to serve as a repository of formative experiences in CI, but also as a reference and a training tool for the members of the CI professional community.

3.2 The case method

Inspired by English common law to which concepts of jurisprudence and judicial precedent are central, the case study was first introduced at the Harvard School of Business in the early XXth century as a tool designed to train specialized practitioners in fields as varied as law, medicine or management. In opposition to discursive pedagogy, the case study method emphasizes learning through the concrete, through the action (learning by doing) and could therefore be qualified as “active and experiential” [Arrow 1962; Anzai and Simon 1979].

The case study method has been developed for adult learners [Bédard et al. 1991, 2005; Hammond 1976; Hlady Rispal 2002; Leclerc et al. 1996; Pagès 2008], leading the student or the group to analyze, discuss and resolve a case, which, for all intents and purposes, consists of a problematic situation based on real life or fiction. According to the situations they describe, cases fall into three categories: real cases (natural or selected), typical cases (constructed or built) and natural typical cases (built from data collected in organizations or Harvard-type cases). The case study method has been successfully adopted and applied in most law, medicine and management schools around the world. It allows for contact with a multitude of debatable situations, while helping improve effective argumentation, problem solving and analytical skills. Authors have been singling out, however, the challenges raised by the scarcity of real cases [Armisted 1984; Ross and Wright 2000], which alone reflect the complexity of real situations; the relatively long delay of preparation, evaluation and publication that are specific to the regular process of case study writing; and, last but not least,
the cost of consulting the cases repositories online. One way to respond to these critiques is by involving students in the activity of writing cases arising from their own professional experience, as means to vary the training strategies and to «integrate experience, theory and reflection» [Gosling and Mintzberg 2004], in order to better prepare the next generation of CI professionals to assume positions of responsibility or positions very close to the decision centers.

4 Methodology

4.1 Writing cases

Having noted the need experienced by professional training programs for relevant learning material, reflective of the social-economic reality, and conclusive to the review of literature focussing on knowledge management, on appropriate methods for knowledge transfer, and on case learning strategies designed to implement real case writing by CI students-trainees, we hereby examine the methodological benchmarks to be applied in launching the pilot project of the case study base (knowledge base).

Under the conventional approach to the case study writing technique, it is the professor (or his research assistant) who assumes this task, in the following sequence of steps:

- identify the need to exemplify a concept or a situation,
- choice of the environment / organization which illustrates the concept or the situation,
- relevant data and facts collection,
- conduction of interviews,
- drafting of the first version,
- verification / test in class (case study)
- rectifications,
- preservation of the organization’s anonymity,
- permission to use the case provided by the organization,
- utilization and publication.

In synthesizing this process, we obtain the following methodological cycle: “need – current situation – data collection – text drafting – test – text review – permission to use – official use”.

The suggested alternative approach to the classical model is the “internship conclusion approach” [Moldovan 2008]. According to this new model, the student-trainee assumes the task of writing the case study, based on his knowledge of the organization where he served as an intern. Written at the end of the internship, as a complement to the master’s thesis, the case study represents a formal opportunity for the student to elaborate on his internship and defend his thesis, as a means to demonstrate his experience and conclude his training.

In utilizing the “internship conclusion approach”, the case study serves to illustrate in a practical form both the concepts covered during the training and their appropriation by the learner. The environment within which the case is situated corresponds to the organization where the internship takes place, and the collection of data and the recording of interviews is achieved throughout the internship, in consistency with the assigned activities and the research through the complementary sources of information (economic newspapers, data bases, etc.). The aim is to continue with the selection, the analysis and the further elaboration of the case study, while observing the methodology and the ethics of the profession.

4.2 Methodological benchmarks

The end-product product, the «real case – internship conclusion», lays out the problematic situation at the core of the internship, within a document of varying length (from few pages to dozens of pages). This document is precise, clear, logical, written objectively, and based on the study of the organization. The first draft is validated by the internship tutor, adjusted in accordance with his comments and disguised in order to respect the confidentiality requirements of the organization.

The case must remain narrative, journalistic, logical, technical in style. The
writer combines real and fictional characters, information pieces and useful data, some less significant, even contradictory. The case becomes then a history, as in “real life”; it describes events, introduces participants, and suggests the study of a problematic situation which requires a solution. Different possible approaches that can be identified may include presenting the decision that was made and the discussions it may have generated, confronting with a series of several options, or a situation scenario where the problem or its nature are not explicit.

Without being binding, the structure of the document should be articulated around the following:

- introductory paragraph, giving the reader the possibility to locate the action;
- history of the organization, creation date, evolution;
- highlighting the problem and the participants, the core of the case study – key dates, facts, figures;
- conclusion of the case study, including a several possibilities: a presentation of the decision to be taken, which the reader has to justify during the in-class discussion; the decision already made, which the reader will be invited to discuss; confrontation with a series of options which the reader has to select and justify; situation scenario where the problem or its nature are not explicit;
- bibliography;
- annexes and tables related to the problem,
- note on the industry or the technology.

The case the student must write does not necessarily disclose the real solution that was retained, nor does it have to produce a fictitious one, if that corresponds to the wishes of the organization or the student himself.

After it is written and made anonymous, the case is evaluated by the internship tutor and the professor, and placed in the knowledge base, whose design must factor in the following non-exhaustive elements: objectives, audience, the value of the information, degree of codification, degree of validation, editorial board, etc.

The projected database should be a function of the following parameters:

- raison d’être (the reason for being) of the knowledge base: the need to access case studies that are closest to the reality of the CI assignments in the organizations;
- participants who contribute to the life cycle of the base: producers, users;
- audience: members of the community of practice (professors, students, CI professionals);
- value of the information: period of validity: long; scope: informative document;
- aim: training;
- degree of codification: documentary structure: bibliographic data base / full text, controlled indexing;
- degree of validation: personal story, with respect to the consigned elements;
- editorial board: contributions placed in the base after the professor’s evaluation, frequency, etc.

5 Results

The establishment of a CI case study base at ICOMTEC is at its inception; the experiment was started in the course of summer 2008. The project is also being conducted within the second training-track of the institute, the professional master “Strategy and Communication Management” with the goal to examine, following a three-year-pilot, the educational benefits generated in both fields. Despite this short interval, it is possible for us to remark that the students adopted the process with interest and that they are comfortable with the framework of the project and its leading parameters.

On a comprehensive cohort of approximately thirty students which have realized their internship and submitted their cases, we selected the top twenty texts, in order to be placed in the case data base. For a first experiment, the proportion is quite satisfactory. Some of the non-selected texts reflect general difficulties in writing which are not related to the very logic of the case; some others have failed to comply with the instructions, particularly with regard to the anonymity of the organization. Some of the cases have not been successfully concluded or were in such instances where they were deemed inexploitable for our current purposes, either due to the contradictory instructions given by the organizations or because of
the obligation to abide by confidentiality requirements.

Ultimately, at this point of the project, we consider that the novelty of the experiences described in these cases, the proximity between authors-students and their colleagues, the shortness of the cases and their conciseness reflect the high diversity of work situations and represent a strong argument in favor of the creation and utilization project of a CI case base, for the training of students enrolled in the programs of the Institut de la Communication et des Technologies Numériques (ICOMTEC).

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Knowing is action: from noticing to sense-making

Nicolas MOINET*, Pascal FRION**,

* Lecturer, CEREGE Laboratory, Institut of Administration of Entreprises, University of Poitiers, Adress : ICOMTEC, 2, rue René Cassin – BP 60164 – 86962 Futuroscope cedex, tél : 33 (0) 6 12 23 68 41
nicolas.moinet@univ-poitiers.fr

** Phd Student, CEREGE Laboratory, Institut of Administration of Entreprises, University àf Poitiers, Adress : Acrie, Aéroport Nantes-Atlantique, rue Nungesser et Coli, 44860 Saint-Aignan-de-Grand-Lieu, tel : 33 (0) 6 14 63 78 55
pascal.frion@etu.univ-poitiers.fr

Abstract
Knowledge and action: a chicken and egg situation. Who is first? Knowledge is traditionally implicitly separated from action. Knowledge is supposed to be ahead of action. We turn information into knowledge. Foreknowledge is supposed to bring victory on competitors or enemies. If it is not possible to be clever with no information, information does not necessarily brings brightness. Information overload can even produce stupid behaviours and wrong decisions. Should humans consider themselves as separated from their environment so that they have to analyse it before they act? Our knowledge is largely made of considerations (culture, education, context, etc.) and it regularly makes us act with no prior intention. To this extend knowledge is action. A new information management has to be built on this issue.

Keywords: action, knowledge, competitive intelligence

Knowing is action: from noticing to sense-making

According to Auguste Comte and the positivist thinking we need to « know to foresee to be able to ». Althought this mecanist pattern does not hold to facts, it is still very much in use because it answers numerous interpretations over control by information.

Also, who could stand in front of J.F. Kennedy's sentence « ignorance costs more than information » ? In fact we take shortcuts and think as if the reverse is true. To be precise, we should say that intelligence deficit costs more than intelligence. Of course it is not possible to be clever without information, however, information by itself does not allow to be clever and can even create some foolishness by an educated ignorance rather than by stupidity. Philippe Dumas (1991, p 8) reminds us that « information overload can lead to an inintelligibility of the world and desastrous decisions... ». As an example we can consult the works of the sociologist Christian Morel (2002) on absurds decisions and the works of Isaac Ben Israël on intelligence (service) philosophy (2004).

In his book La mal-info (2006), the media sociologist Denis Muzet develops the idea that we have unconsciously turned into « media-sensitive beings ». And yet the media represent nourishment that we don't know very well, facing the risk of being overloaded with information or badly informed to say the least. We often passively consult accessible data from the media and we rarely voluntaristly seek rare
information that answer our preexisting needs. According to Denis Muzet, we look for information to be connected and to stay tuned rather than to really understand the world. Information would cause this anxiety and would also be a remedy. Is this a vicious circle? Denis Muzet suggests means to break our chains: being on an empty stomach over the media, using specialized media, re-establishing connivance with the media, being a media by ourselves, etc. Indeed, these suggestions can be successful if they distinguish information and knowledge. The person's myth must also be replaced by the idea of a link.

1. From « knowing to doing » to « knowing is doing »

Sociologist and psychologist Miguel Benasayag (1998) criticizes the idea of the individual as the center of our occidental world. This myth would explain this feeling of inability that is strengthened by this deluge of information. Therefore when we think as individuals we feel we can not do anything. Psychologist Loewenstein (1994, 2000, 2996) shows us that curiosity tends to put us into an information overload situation without helping us to take decisions. So what shall we do?

1.1. « Knowing is doing »: the collective intelligence challenge

Miguel Benasayag and Angélique Del Rey (2006) start criticizing the individual myth and suggest a constructive approach to answer a crucial challenge: how can we recover our ability to act? They introduce the idea of landscape. We are not free individuals in the world. We are linked to one another. We are parts of a all-in-one living scenery. This landscape is evolving with its constraints and unsolved contradictions. In this idea we notice the key topics of dialectic (Dumas, 1991) dialogic (Morin) and emergence (Varela, 1988). Isn't it the OODA15 loop? Could the idea of unity by Benasayag represent harmony in the couple agility/paralysis relation?

This is precisely what Miguel Benasayag claims. Our inability to act (our paralysis) relays on the illusory idea that we are distinct from the world whereas we are part of it. Being informed prior to act is not the reality for two reasons. One the one hand, we are already in action. On the other hand, information needs to be turned into knowledge. Benasayag (p 23) warns us: acting is not following the inintelligible flow. We have to accept that each knowledge develops with a structural opacity. We are not far from questioning the paradigm of progress for information (Frion, 2009b).

Michel Benasayag uses neurophysiology to develop the idea that conscience is superficial with regards to knowledge. Our conscience intervenes very late in the process but is seen as central due to the fact that of its existence: before the conscience in the process, we are not conscious of it! Not only knowledge is deeper than the only state of knowledge but also perception is closely related to the landscape. Therefore we refute the cartesian view of duality of soul and body.

Neurology professor Antonio R. Damasio develops the idea (1995) that rationality does not consist of separating with emotions. On the contrary, reason does not ignore emotions. Absence of emotions and feelings prevents from being rational. The famous Descartes' « Cogito, ergo sum » should be reversed. Thinking is due to the existence of our baby (Damasio, 1995, p 311). Our reason hasn't got less value than emotional perceptions. A better understanding of physiological mechanisms will improve our capacity to feel and express emotions, being more conscious of the traps in scientific observation.

Edgard Morin is also suggesting this idea when he investigates strategy (Morin, 1980, pp. 224-226 in Dumas, 1991, p 74). On the one hand strategy needs a capacity

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OODA stands for Observe, Orient, Decide, Act
of doing in uncertainty. On the other hand, strategy is built during the action. Again we find the Ooda loop. Edgar Morin reminds us that knowledge is also a strategist. The strategy of knowledge is necessary for the strategy of doing. We can notice the Prescott's idea of competitive intelligence as a triple component: art, science and craft (2008). We also notice the Mintzberg view of the myth of the total information system that could provide us with every information needed (1972). Mintzberg believes that strategy can be obtained by planning and by emergence (1987).

Competitive intelligence is suggesting the same message. Unfortunately, related concepts have not found their full range of use, for semantic reasons based on cultural reasons. Watching gives us the passive image of the radar screen. A very useful concept for software developers for whom a watching software can raise the alert. However, this concept can be counter productive if there is little distinctions between key topics. Indeed, knowledge is not limited to consciously integrating information with the refinery model (petroleum would be the black gold and information the grey gold in the post-industrial age). The relationship between the manager and the person in charge of the environment scanning is frequently poor in the refinery model (Frion, 2009a).

In a biological model, knowledge is first because it starts with perception. This is in opposition with the classic pattern that states that our thinking would traditionally start by being aware of the problem in order to identify solutions to solve them.

And yet, with this information explosion this illusion is more obvious than ever: being informed is not enough to act, all the more that too much information can paralyse action (see as an example Loeweinstein, 2000). In order to get out of this dead end, it is necessary to reaffirm our faith in the grec thinking that is « knowing is doing ».

The word "intelligence" is tacitely understood in anglo-saxon countries (Martre, 1994) […] and put in practice (Martre, 1994, p 21). Why?

Edgar Morin (1999) states that the first two fundamental knowledges are:

- the understanding of the blindness of the knowledge (mistake and illusion);
- the principles of a relevant knowledge.

According to Edgar Morin, education can not be blind on humain knowledge, its systems, its weaknesses, its difficulties, its propensions to mistakes and illusions. « Knowledge can not be a ready made tool » (Morin, 1999, p 1). As far as the principles of a relevant knowledge is concerned, it has become necessary to promote a knowledge that would be capable of approaching global and fundamental challenges in order to insert partial and local knowledge. Unfortunately « supremacy of a fragmented knowledge does not allow to link parts to the whole and must face a way of knowledge capable to grab its parts in their context, complexity and group. It is necessary to develop a natural competence of the humain mind to situate all the information in a context and in a group » (Ibid, p 2).

He carries on with his 5th fundamental knowledge, facing uncertainty: « facing hazards, unexpected and uncertain, and modify their development […]. We need to learn to navigate in an ocean of uncertainty throughout archipalagos of certainty » (Ibid, p 3).

1.2. Competitive intelligence, a matter of education

In the Edgard Morin's tradition, Jean-Pierre Hamon (1994 et 2005) mentions that the French educational system is teaching an impoverished cartesian method (logic) that distinguishes and puts up the elements of a same reality and is allowing at the very most to process the complication but not the complexity […]. The teacher leaves the learner the action to « transversalize » the provision of each educational teaching. Of course this mistake is also noticeable in
CI for a long time when it is only seen a list of environment scanning topics. Martinet & Ribault, pioneers in this topic (1989) present the 4 main types of information scanning (figure), using the 5 forces or Porter (1986) that command competition in a sector.

Refering to Porter's work, this didactic presentation is seeking a legitimacy in many books. Competitive Technical Watch and innovation are put forward by engineers (Rouach, 1996; Bloch, 1996). This presentation is rapidly counter-productive in the management culture that likes to divide tasks to the detriment of collective intelligence. It ends up with a division of the watching process (Achard, Bernat, 1998) impoverishing considerably the analysis capacity of the whole. The leader of a little company gathers and conjugates thinking, memory, will, decision and production, therefore he represents a CI approach that does not separate the project from the information, as it is frequent to notice in large firms (Frion, 2009a).

Practically, we can see the consequences of a mind set that concentrates more on structuring disciplines than minds (Hamon, 1994). A lack of opening-up follows, in particular to other cultures and negligences in security. How could we secure our information when we already experience difficulties to actively acquire information? Contradiction is rapidly fading. Conquerors and open companies know best how to protect themselves. Openness and closure are the two sides of one same dynamic. A French weakness in a compartmentalized society that does not suggest to protect collective goods nor to distribute information in a network-centric approach. Further, the French educational system favours passive acquisition of knowledge and memory too often (Hamon, 1994). Obviously, in a society that experiences information overload the anglo-saxon tradition that puts forwards that ability to access information is an advantage. A the high education level, the French exception does not value the training by the phd research. This analysis is to be linked to Patrick Fauconnier's view (2005). He believes that two models of school exist at

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16 We have noticed over the years educative shortcommings in the frech educational system in the ability to identify accesses and sources of information (Frion, Moinet, Samier 2007; Moinet, 2008a).
The same time: the refinery model (France) and the nursery (Anglo-saxons, and north of Europe countries). The refinery model is from Plato, with the theoretical knowledge. The nursery model is from Aristotle with the know-how. Of course the nursery model is more favorable to CI logic.

**The Refinery and Nursery Paradigms**

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<tr>
<th>Approach</th>
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<th>Nursery</th>
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<td>Appetences</td>
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<td>Theoretical knowing</td>
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<td>Promoted Faculties</td>
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<td>Superiority culture</td>
<td>Diversity culture</td>
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Source: adapted in english from Fauconnier, 2005, p 81.

The former is dedicated to talents to hatch. The later aims at elaborating the perfect liqueur, whatever the waste that goes with it.

In the field we investigate, this analysis needs to be completed by Béatrice Vacher (1998). She has analysed the information distribution in two different companies: one is an architect office and the other is Edf. In her study she describes that reality can be very different from the traditional conceptions. Whatever the central regulation, the information warehousemen have obscure and neglected tasks and are the true vehicles for information exchanges in the company. In the large company Béatrice Vacher observes that the centralised mediator always tries to set up this kind of unproductive organization, due to the computer representation in a world of mathematics and the link with the capacity to govern (and to manage). This conception favors the Logos (scheduling the verbing and theories) over the Metis (practical intelligence). According to Béatrice Vacher tasks that manipulate information belong to the Metis and the centralized mediator belongs to the reassuring Logos. Chosing centralization consists in re-establishing hierarchy between the important-information-and the minor-backup. Backup is less important and is devoted to information warehousemen (Vacher, 1998, p 34).

With no intent to take the anglo-saxon model as a friction-free model, it is necessary not to trust the French way of team work. Indeed in distributing information to everybody it becomes the victim of the communication and transparency myth (Breton, 1995) that can lead to paralysis. Vacher believes that French conception is to reach a perfect agreement with an identical view of the situation. The fundamental advantage of the North American culture is the acceptance of the practice with no opposition between Logos and Metis (Vacher, 1998, p 38).

Further, Patrick Fauconnier mentions that in the second model, the other one, is considered as a competitor to beat and not as a chance to add. This exclusion and reproduction social logic leads to arrogance and corporatism all the more that effectiveness is not met. For Francis Kramarz and David Thesmar (2006), larges French firms management by formers students from the high public service education system is worse than the average. Their co-option networks would particularly impact negatively on their organizational intelligence.

Thus, French social relations between employees and managers strongly remain marked by hierarchy, elitism, lack of trust and cooperation, in spite of openness to
globalization of French companies. A ten-country study by Bpi and Bva shows that French employees gives lower marks to theirs managers, 15 to 20% below the ones for English, Americans, Germans and Scandinavians. Brice Mallié\footnote{Director of the management department at the consulting firm BPI.} (2008) refuses to use the old cliché that shows the French as a moaner and the Anglo-Saxon as positive.

« There is a correlation between competitiveness, growth, employment rate, on one side and quality of social relations and management on the other. Trust, constructive confrontation, cooperation, a sens of balanced hierarchy, give performance [...] In the XXIth century, work organizations request a network-centric approach, trust and responsibility from all » (Mallié, 2008).

Thomas Philippon\footnote{Economist, Professor at the New York University – Leonard N. Stern School of Business. www.stern.nyu.edu} (2007) analyses this French paradox: French flee their firm and value the work. The economist shows that this situation is largely based on a capitalism that favours direct inheritance or sociologist social reproduction by a diploma or a status. Capitalism of heirs offers some stability but also prevents from the renewal of the managerial elite and discourages the most enterprising persons. It also deprives the economy of rare talents. Ignorance and distrust are fed.

Now does it come as a surprise that the French management culture is still reluctant to the importance of strategic management of knowledge? The Boston Consulting Group and the World Federation of Personnel Management Association have recently launched a vast enquiry towards 4.700 executives in 83 countries. Results are significant: talents management is within the top priorities of companies all around the world except in France. Distributing knowledge within the company is not considered as a strategic objective in France, which is not surprising for our culture built on individual « genius » (Les Echos, 2008, April 21st, p 14).

In contrast with « knowing is doing », « knowing for doing » are the cornerstone of the French CI with an adverse point of view. CI is not limited to a tool box, it is a company project. In the 60s in the Usa, CI was included in the company strategy from the start. In France the ingeniers' mindset often uses plans (Siegel, 2008). In France, status surpasses function, membership surpasses competence. Therefore we understand why CI is not distinct from original strategic thinking in hypercompetition. Insisting on ongoing revolutions, the French official speech over CI is calling for a modification of information behaviours and social structures so that we call this peculiar « French exception ». If the French school in CI often mention behaviours, it often limits itself to set theories, library and information science, computing and most of the time it ignores authors like Bates, Dervin, Wilson, etc.

Economists Yann Algan and Pierre Cahuc (2007) demonstrate that France is involved in a vicious circle with considerable economic and social costs. For more than 20 years, more than anywhere else, we have been distrusting our fellow citizens, public services and the market. Distrust and no sense of civic responsibility are not immutable but they are fed by corporatism and statism. This situation diminishes the capacity of the French to cooperate, stimulating the State to regulate and to empty the social dialog. It goes on and on. This lack of trust drastically decreases employment and growth. As it happens, wealth is the daughter of trust. CI is claiming this message of trust when it states that knowledge and information management are keys to competitiveness for companies and regions. Therefore, we need more than just methods, we need a collective impulse to win. Alain Peyrefitte (1995) believes a country with distrust, on a win-lose basis,
is not gaining anything and ever destroys wealth. On the contrary, a country with trust, is growing on a win-win relationship, with solidarity, collective projects, openness, exchanges and communication. This last word is very important. Indeed, if national culture is not spread uniformly nor it is futile to change it. Crises of all kinds can help to force it to change. A good example is the Atlantic Shypyard near Nantes, in France (Moinet, 2006a).

In 1997 the Atlantic Shypyard are going down and their new Ceo is new in this business so that his strategic analysis brings radical changes. Some large markets are rather free of competitors, 50% of the construction constraints are benchmarked with other industries, etc. Competitiveness is low with a high level of subsidies. A new plan-Cap21-has 3 objectives that will be successfully reached: 30% costs cut, becoming the world leader on liners and increase production. Culture also moved forward with a fascinating interest for the product they make. However, the Ceo-Patrick Boissier- reckons French are arrogant to the point that they know better than their clients and only notice what they do better than competitors (and not what competitors do better). When Alstom needs to recruit 600 people for its shipyards, things change because they bring with them some fresh thinking. For the Ceo, the important thing is communicating beforehand and not letting the flame go off.

And now Anne Mayère (1990) argues that «information does not exist by itself». Information is a process that turns the receiver as a co-producer. Information is treated and obtains a significance that depends on its use and the tolerated uncertainty related to it (Mayère, 1990, p 285). Then, knowledge appears has an individual and collective production, guided by a common vision for the objective to achieve and for sense-making to give to the action. Therefore the French expression metteur en scene witch is adapted from the film director expression, gives metteur en information with regards to competitive intelligence (Frion et Frion, 2008). This expression combines knowledge with ingenuity on the spot rather than with process on an administrative mode.

2. From strategic information to knowledge

CI foundations tell us that information is not enough to act. Wilensky (1967) sees CI as a process of production and not accumulation. «Interpretation skills» are essential.

2.1. Operating limits of the concept of information

Researchers from economics, library and information sciences, communication, know it by heart, since Shannon (1949) and Wiener (1952): information is a treatment object and a means to reduce uncertainty. Action is considered as an ongoing logic that adjusts with feedbacks between the sender and the receiver. This physiciens' vision does not apply directly in social sciences. Neo-classic economists received it favorably to start with when they considered that the agent is rational and the market provided him with information to be rational (Albertini, Silem, 1983, pp. 80-88). As for Friedrich Von Hayek information is the central problem in economic processes. Herbert Simon introduces bounded rationality: information in uncomplet and information treatment is limited. Organization is considered as a process that gets closer to rationality providing people with necessary information to treat information. For James March and Herbert Simon (1958) the decision process is made of 4 stages: environment observations, analysis, operating system selection and decision. Once again we fing the famous information cycle. March and Simon believe that individuals can not face the huge

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19 His article in American economic review: « The use of knowledge in society » is traduced in the Revue française d'économie with the title « L'utilisation de l'information dans la société ». 
amount and complexity of information and only individual cognitive capacities can face this challenge. Crozier and Friedberg (1977) introduce a new conception in strategic analysis when they state that an organization is made of power relations, influence, bargaining and calculation that use 4 sources of power corresponding to the sources of uncertainty: competence mastering; relations with the environment; mastering of communication and information; organizational general rules; the need for networking (ibid, p 83). Philosophy of CI appears here but has not hatched yet before information and knowledge are distinctly presented.

Edgar Morin does not consider information by itself but embeded in organisation and communication (Laulan, Perriault, 2007, p 187). In smes (Jacques-Gustave & Moinet, 1995; Moinet, 1999; Moinet, 2006) we noticed that reductionism does exist. The mecanist conception of information, hereabove, have been largely used despite the fact of their difficulty for operating use and the persisting myth of the information market.

Very few are the CI literature books that distinctly present the differences between data, information, knowledge and intelligence (in the French sense of renseignement). Philippe Dumas (1991, p 4) separates data as physical signal, and information as an interpretation of the signal in context. Guy Massé (2001, p 176) draws our attention on the fact that information exists when someone has got a need an a will, whereas knowledge exists when people know how to use it and that can make sense of it. He argues that knowledge find its aim in action (Ibid., p 179) and CI looks like a sensorial vigilance system. This conception is very much adapted to the agility/paralysis couple and to the Ooda loop.

Jean-Louis Levet (2001) observes that information and knowledge are generaly not distinct in economics.

As for Philippe Dumas, cognition is a «knowledge activity based on the traduction of symbols handling by calcul, a building of a representation of the situation and a direction toward the solution of a problem by conception and evaluation of action scenarii» (Dumas, 1991, p 50). Using this systemic philosophy and noticing that mosts authors in CI consider objects rather than processes, we use Pierre Chapignac's pattern (1994). Working on the value of information, He considers that information is determined by its integration in a group that can be called «thinking action». In other words, information value is defined in context of the action. This value can be a evaluated as a content, redundancy, diversity or quantity. The value of information is determined by usage or help it provides, not by itself. Chapignac shows the functional link between information and knowledge : «The value of information is proportionate to the integrated knowledge. Knowledge all the more brings value that is diversified» (Chapignac, 1994). Therefore the value of information is determined by the level of sharing and by the quantity and quality of exchanges.
From this diagram «thinking the action» we bear in mind the idea of system. None of these elements can be linked to any other one with no consideration to the whole lot. In some cases, links are direct and short but strategic decision needs the the complete set. Strategy can be defined as «the art of using information that pop up in action, integrating them, and spontaneously formulating action diagrams, and being capable to gather the maximum of certainty to face what is uncertain» (Morin, 1990, p 178). No doute the favoured intuition of the heads of companies is nothing else than this hidden diagram, whether it is conscious or not. The missing link between and CI and information could be the communication process. «There is no communication without organization, no organization without communication.» (Dumas, 1991, p 36). In 2003, Ratan Tata from India, decides to launch a new car called «Tata nano». The very low price is decided in a discussion with a journalist (1700 euros). Ratan Tata decided to build the car accordingly to the price and put greats efforts in communication to convince the employees that it was possible (Julien Bouissou in Le Monde January 23rd 2008). Ratan Tata set up the price in a partially conscious process based on a clever collective organisation based on information sharing rather than on a genius intuition. The leader that does not decide completely is still very useful. The gap is large between the quality of information or cognitive bias and the vague attempt about decisions that have to be considered.

«Decision-makers do not decide, they take part in the decision making» (Bellier, Laroche, 2005, p 19).

After his phd in economics Antoine Saïd realises that in setting up a technical watch system at the French Company Sfr, the main difficulty is human-related (Granger, 2005, pp. 31-32). This is often ignored by CI theoreticians, in France in particular. Often, individual technics win over collective management.

Antoine Saïd (2004) believes «above all CI is a process that helps people to modify their point of view of the environment (...) with three major elements: appropriation, sensemaking and action.

- appropriation of necessary information;
- sensemaking (Weick) to bring out the possible sense of a strategy;
- action is based on knowledge of the company over itself and the environment» (Saïd, 2005, p 28).

Antoine Saïd highlights the importance of the people absorption capacity within a CI.
system. Cohen et Levinthal (1990, 1994), define the absorption capacity as the capacity to identify the value of a new information, to digest it and use it (knowledge) for business purposes. Overall, the conception of information is moving from useful information (Martre, 1994) toward the power of absorption capacity in order to produce collective knowledge. If information does exist, it will be consulted and turned into knowledge, otherwise, it will be necessary to seek and invent it with successive tests (Frion, 2009a). We can see from here that knowledge is an operating concept because it allows to get out of intellectual and conceptual dead ends such as information overload, infopollution, infoxication or infobesity.

Information is strategic if it allows the appearance of knowledge. The difficulty is to create and run efficiently a virtuous apprenticeship cycle for the organization. Politics is the key because intelligence is the capacity to link what is separated, to turn information into knowledge, to drive an apprenticeship dynamic (Senge, 1991) with a close relation with the environment. It is also unlearning what could paralyse the thinking of action (Baumard, 1995). Thus, it is not a surprise that Japan has been taken as an example and used for CI models to CI pionneers, providing platforms to share and cross information before making a choice and a decision.

« [in France, information] becomes an object that is distributed on a trading base, whereas on a relationship model, information mostly remains a means, a ressource that strenghten the relation » (Ribault, 1995).

This is the strenght of the Japanese CI model, which intelligence is the fruit of a collaboration-based relation capitalism. In Asia, the conception individual does make much sense until he is contributing to a group, whereas, in Occident, individuals exist by themselves. Japan is therefore fascinating for France where distrust is high. « We only can see well with the heart » says the fox to the Little Prince, « What is esentiel is invisible to the eyes » (Saint-Exupéry). French CI that went to Japan came there with an idea to discover the information samourais of information, and came back with change management, the willingness to listen to other people, and participative management principles that will have to be put in practice back in France.

Intelligence is a collective matter, therefore it is a cultural matter too. This is why the famous CI tools like surprise and discovery reports, benchmarking, seem so easy to realise to start with. And as soon as the job starts, they need participative management and networking to make sense. It is a constructionnist and an interactionist approach of organisation, such as Karl Weick or Brenda Dervin (Dervin & Nilan, 1986) have put forward.

Psychologist and organization Professor Weick considers that organization is moving and building itself with communication, interpretation, mutual adaptation. It is breakthrough compared to objective caracteristics like size, technology, environment, etc.

Karl E. Weick (1969, 1979) explains that organizations only can react to various elements of the environment through their own cognitive tasks. Sensemaking is a collective task and comes from cycles of enaction (Varela, 1988): acteur α (an individual or a group) suggests an interpretation that is accepted, rejected or modified by β (interaction) and this leads α to abort, modify or maintain his choice (double-interaction). These cycles of behaviours are linked and allow to making sense collectively and face the unforeseen. As such the survival probability of an organization increase. Especially when variations and possibilities increase and when tests and errors become more diverse and less typical, when individuals reproduce less often previous tasks and when creativity is encouraged. This process of making sense is triggered by
the unexpected, target-centered and sensible to context.

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Methodology to integrate Competitive Intelligence with the Hoshin Kanri planning system: Application to a Commercial Strategy

Filiberto Luévano Narváez*, Marisela Rodríguez Salvador** and José Roberto Antonio Vega Pino***

*Company X
México
fililuevano@gmail.com

**Quality and Manufacturing Center, ITESM
Instituto Tecnológico y de Estudios Superiores de Monterrey
México
marisrod@itesm.mx

***Quality and Manufacturing Center, ITESM
Instituto Tecnológico y de Estudios Superiores de Monterrey
México
jo.rvega@gmail.com

Abstract
This proposal integrates the Competitive Intelligence with the Hoshin Kanri methodology in order to improve the planning process of the organizations. This approach conducts to generate strategic plans proactively considering future trends in markets, competitors, clients and business opportunities. The proposed methodology is applied in a case study of the strategic commercial area in a cement company.

Keywords: Competitive Intelligence, Hoshin Kanri, Commercial strategy, Strategy definition, Planning System

1 Introduction
Today, globalization is affecting many companies. In order to remain competitive these companies should constantly monitor its environment to define strategies, avoid threats and benefit from opportunities in the market. To plan strategically and react to the changes in the environment, it’s necessary to know and analyze it. For this, companies and organizations use different tools like the competitive technical intelligence, the Balance Score Card or the Hoshin Kanri planning system, among others. These tools allow a constant preparation and actualization that in addition to the development of strategies, increases the company’s competitiveness in the market.

Companies need strategies to be competitive and consequently require well-defined processes to generate the expected results. According to Porter, this formulation process is generated with the following three elements
• What does the company do?
• What happens in the company’s environment?
• What should the company do?
From the list above, the second element is the most important one because it allows having a detailed review of the company’s environment and allows strategies to be formulated. Is in this context where the Competitive Intelligence (CI) is applied.

2 Background

As Comai and Tena [2006] establish, anticipation is a key success factor in the business world, thus special attention should be focused in new business models, innovation, emerging markets and other aspects that could affect the company’s competitiveness. Planning systems help companies to react similarly to specific situations using the same language and taking concrete actions.

2.1 Competitive Intelligence

After WWII, Japan had to improve its manufacturing companies in order to achieve world market competitive standards and increment their sales. Throughout the years, the multinational companies established internal departments who collaborated with the Scientific Information Center to gather and analyze information of what was important for their company Herring [1999]. During the 1990’s, the concept of business intelligence kept evolving until it was introduced to businesses as Competitive Intelligence.

Competitive Intelligence is a systematic process focused on the search, selection, analysis and distribution of the environment’s information. CI adds big value to strategy formulation and implementation, including specific actions for business units, production areas and other departments. Its objective is to obtain competitive advantages not only for the present but also for the future organization’s development.

In order to develop the appropriate CI program, it’s necessary to focus on the following six dimensions stated by Comai and Tena [2006]. “Process” describes the functionality of the CI program inside the company by considering the idea, the project and system. “Type” refers to the organizational model that the program needs to incorporate either being centralized, decentralized or a hybrid. “Strategy” focuses on the kind of system used either for tactical, business or strategic decisions. “Localization” defines the specialization of the study from seven different themes, including market, technical and financial intelligence. “Time” considers the life span of the information to be used that could be short, medium or long term. Finally, the “Object of the research” specifies if this study will get knowledge of the competition or the environment in general.

To obtain a holistic vision of the environment analyzed it’s necessary to use primary and secondary sources. Primary sources contain data that is recollected directly by who generates the information,
which are competitors, employees, gatekeepers, distributors and others that can be classified as internal, external and experts Fleisher [2004], Mockler [1992], Peters [1993]. Secondary sources contain primary information that has already been processed and can be presented in newspapers, magazines, statistics, databases and the Internet Fleisher [2004], Mockler [1992], Peters [1993].

Figure 1 represents the intelligence cycle considering the review of information needs, the appropriate channels to obtain information and determining how to incorporate the results of the intelligence process to the strategic planning of the company. In the planning stage of this process, needs, users, objectives, available resources, an activity schedule and responsibilities are designated. Information sources are selected depending on the users’ needs and objectives stated before, which can be primary or secondary information sources. In the Information collection stage, information is gathered depending on the available time, quality, and cost taking into account the process of intelligence proposed by Ashton and Klavans [1997]. The two most utilized techniques are technology exploration and use of databases. During the Data processing stage, useful information is selected depending on the needs and objectives of the project. In the Analysis stage, the information is transformed into an actionable product that supports the decision-making process. In the Results delivery stage, a tool for distributing information is selected; it could be a combination of reports, memorandums, e-mails, telephone calls, meetings or oral presentations. The Timely decision making stage involves creating a direct benefit for the company, looking for success as a result of the decisions taken. Finally, the complete program should be evaluated and improved given the dynamic nature of companies and the environment.

2.2 Total Quality Management

Businesses have considered the importance of quality for the development of objectives and productivity since long time ago. In the production area, products are manufactured to meet established standards, but the principal goal has always been client’s satisfaction.

Employees must create systems and procedures to avoid defects in production, they require specific knowledge and appropriate tools to anticipate problems. Total quality is a strategic factor that many companies depend on to evolve and expand its goals and facilitates the business administration to meet the client’s needs.

Total quality is an integral philosophy that searches and promotes continuous improvement through all its areas and business functions by involving its employees toward the final objective: the client’s satisfaction. Deming and Duran’s quality research focuses on the company’s commitment, improvement, use of quality control techniques and the importance of employee training Soin [1999]. On the other hand, Crosby analyzes the primary behavior and cultural change in the company Soin [1999]. Evans and Lindsay[1999] states four important quality elements; those are the client’s needs, planning, manufacturing (zero defects) and management process.

Total Quality Management benefits the entire company by satisfying the customer’s needs; this philosophy directly affects all the company’s management and tries to motivate employees in the sense that their work is crucial to improve the quality and characteristics of the products and services.

2.3 Planning Process

The objective of this stage is to consolidate a capacity to anticipate facts in long term horizons with the focus of preparing a work group with strategies and action plans specifically oriented. Johnson [1999] states that planning is “a formal process of establishing a mission with objectives and
goals, as well as the processes through which they are accomplished.”

Porter [2004] establishes that the fundamental bases for planning are: the strengths, competitive advantage, threats and weaknesses present inside and outside the organization. According to Johnson [1999] the fundamentals for a planning process are vision, strategic thinking, problem solution, decision-taking process, focus on goals, commitment to change, commitment to development and preparation for possible failure.

Each of these fundamentals must be validated periodically and thoroughly by planners to prevent setbacks since well-prepared plans are a guide to achieve success. For a company to be successful, all people involved should have access to information, assimilate it and be able to put it into action.

Plans should also count with simplicity, flexibility, credibility, applicability, operability and vision. When these characteristics are applied, the result is an effective and easily comprehensible plan that establishes the same language throughout all the organization. At the end of the process, the defined plan is a map to achieve the expected goals by exactly defining what, who, how, when and where.

A long-term plan should include an analysis of strengths, weaknesses, opportunities and threats to define the strategies to follow by establishing objectives based on real information and data. These plans should also be aggressive and reachable through the correct assignment of resources. Figure 2 shows the steps to create a long-term strategic plan. The long-term plan creates 3 to 5 year objectives and an annual plan in which each objective specifically includes information related to who is in charge, how the work should be done and time limits. The Hoshin Kanri planning system is a methodology that helps define the annual plan for businesses.

Hoshin Kanri originated as part of Total Quality Management, is a control system and activity for continuous improvement. Nayatani [1984] in Yoji [1991] states that this kind of plans could operate as a systemic control of activities for annual politics based on the company’s vision, management concepts and its medium and long term plans. Sugimoti [1986] in Yoji [1991] refers Hoshin Kanri as the most effective system to manage an organization since it globally improves its capacities. This methodology is an effective management system that conducts to the continuous advancement of the organization by the development of an annual politics plan. The main benefit of this system is the orientation to the company’s vision providing a methodology that focuses the company to the most important goals and is extended through all levels in the organization.

Figure 3 presents the Hoshin Kanri model proposed by Cowley & Associates [1995] in Cowley and Domb [1997]. This model is based on the control cycle, which has four steps: plan, do, control and act. This model can be divided in two parts: the inter-functional part and the functional part. The inter-functional part displays the company’s strategy to develop, follow, and achieve proposed objectives in the top level of the organization. In the functional part, the main processes supporting the strategy are defined and strengthen in order to accomplish the company’s strategic objectives. In the first stage, the environment and the company are analyzed. Then the strategy, objectives and performance indicators are settled to have a continuous review. At the end, executives, managers and employees
create specific action plans as well as paths to execute them.

3 Proposal of integration

The proposed model is showed in figure 4. It integrates the intelligence cycle proposed by Escorsa and Rodríguez [1997] and the Hoshin Kanri planning process by Cowley & Associates [1995] in Cowley and Domb [1997]. Briefly, this ten-step model starts with the establishment of the key objective the company is searching for. Then the intelligence cycle is developed to generate knowledge from the environment. Finally, an action plan is created, implemented and ideally monitored continually.

The organization should first establish the key objective where the company’s vision is stated and aspects are prioritized through the creation of an action plan. To develop the company’s vision, the working group generates ideas through an affinity diagram. It is recommended to start with only one department or with few objectives since employees might be saturated and the implementation effort could be sabotaged, Babich [1996].

During the selection, gathering and database processing, sources should be selected according to the company’s resources and the needs stated at the beginning of the cycle. These sources can be primary or secondary depending on the results expected. To analyze effectively the information, the following models are used by different industries: competitor profile, the six angles of the competence, stakeholders, blind spots, technology and patent map, chain value, analysis of the industry (five forces), STEEP, hypothesis analysis, scenario, war games, SWOT, etc. Prescott [2006] recommends to apply a model widely used by companies (industry analysis: 5 forces), to combine it with the chain value model and apply a SWOT analysis. This approach summarizes the actual situation of the company and its industry and it should be periodically updated with the results obtained by the intelligence cycle. To evaluate the intelligence cycle, the affinity diagram allows group participation to show the points of improvement in order to proceed to the next step of the intelligence cycle.
Considering the key objective and the results gathered in the intelligence cycle, strategic objectives are formulated and are distributed to all the levels of the company. Babich [1996] recommends using the *catchball* process where strategic objectives are used to create specific objectives. Again, the affinity diagram is applied to create the objectives of each strategy through the brainstorming process.

For the implementation, each department and person should work together to accomplish the strategic objectives formulated. To establish the basic activities, responsibilities and completion dates, the Gantt diagram provides an adequate tool.

During the monitoring stage, the action plan is modified according to the advances in the objectives execution and the results obtained from the intelligence cycle. These changes allow the plan to be adjusted according to new opportunities or threats in the environment. A periodical review is recommended comparing the expected and real results in a tendency graph.

For the continuous improvement phase, it’s necessary to analyze the accomplishment of the proposed goals for each action and easily update the changes to the implementation plan.

Each indicator should be evaluated; lessons learned, expected results and differences between real and proposed results must be considered for the next period.

### 4 Application in a commercial strategy

This study case consists in applying the proposed methodology, which integrates the intelligence cycle and the Hoshin Kanri planning system, with the purpose of creating a strategic commercial plan for a cement company. For confidential reasons, the company should be called X throughout this research. We selected this study because:

- Presents a real opportunity to validate the results of the research
- The company’s information was accessible given that one author was an actual employee
- The development of a commercial strategy clearly defines the path for other departments, such as production, quality and service

#### 4.1 Intelligence cycle plan

After using the affinity diagram, the key objective proposed for the intelligence cycle was the following: *gather relevant information of the ready mix concrete industry and its commercial context in the city of Guadalajara, Mexico.* To accomplish this objective and create a commercial strategy it was necessary to comprehend the environment and its...
dynamic. The information to be collected in the cycle was:

- Guadalajara’s growth and development
- Demand’s map
- Competitor’s production capacity

Once the objective was defined, the author of this paper from the company, some other employees and industry experts started the project with a 14-week deadline to present the outcomes.

### 4.2 Selection, recollection and databases processing

Interviews with the commercial manager, the local manager and the sales representatives in Guadalajara were used as primary sources. Their know-how and points of view were taken into consideration during the project. The Company also contracted an agency to make a field research in the city. On the other hand, the secondary sources included own files, databases and information from the Instituto Nacional de Estadística y Geografía (INEGI).

Using this information, the growth and development of Guadalajara city was analyzed. The following conclusions were formulated:

- 9 development areas were identified where 6 of them were currently active
- The construction in these areas primarily consisted of housing and commercial buildings. One area in Guadalajara’s downtown has a resurgence of vertical construction.
- 2 other development areas could be of importance for the housing and commercial buildings construction in the next 5 years.

The agency contracted for the analysis of actual constructions analyzed more than 700 constructions sites with a ready mix concrete demand greater than 120,000 m³ per month. Figure 5 presents market share for Company X and its competitors.

To fully investigate the competition’s production capacity, the author and industry experts made visits to each of the 36 plants located in the city. Figure 6 presents the estimated production capacity of each concrete company in Guadalajara.

<table>
<thead>
<tr>
<th>Company</th>
<th>Plants</th>
<th>Trucks</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>10</td>
<td>150</td>
<td>75,000</td>
</tr>
<tr>
<td>A</td>
<td>4</td>
<td>45</td>
<td>18,000</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>22</td>
<td>6,800</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>18</td>
<td>7,200</td>
</tr>
<tr>
<td>D</td>
<td>17</td>
<td>112</td>
<td>39,200</td>
</tr>
<tr>
<td>E</td>
<td>4</td>
<td>34</td>
<td>19,450</td>
</tr>
</tbody>
</table>

Figure 6: Competitor’s equipment and capacity

4.3 Outcome Analysis

By means of the intelligence cycle it was possible to obtain a broad knowledge of the ready mix concrete business in Guadalajara. The conclusions of the results obtained were:

- Opportunity to capture new sales
- Opportunity to grow in specific markets
- Opportunity to establish contracts with top clients
- Opportunity to improve market coverage
- Competitors with limited production capacity

The outcome of the intelligence cycle was used to define the strengths, weaknesses, opportunities and threats for the company and industry. Analyzing its strengths, Company X is the industry leader and has the biggest capacity in the city allowing the possibility to absorb greater sales. On the other hand, the company is not able to easily reach the housing and commercial market, additionally has only a few plants in specific parts of the city. Considering the
industry, X can increase its market share, as the company can increase coverage in new areas and many competitors have reached its production limits. The industry also has threats since many small competitors can keep growing and few clients concentrate the concrete demand. This SWOT analysis was presented to the commercial manager, the local manager and some members of the sales department showing the achievement of the objectives defined at the beginning of the intelligence cycle.

4.4 Intelligence Cycle evaluation
The intelligence cycle was evaluated using the affinity diagram tool. The results established that for the next cycle, prices, products and competitor service levels were included.

4.5 Action plan formulation and distribution
Once the company and the industry were analyzed, several strategies were established to pursue the main objective defined before. The local manager in Guadalajara established a goal of 45% market share to maintain leadership. To complete this goal he designed a specific strategy to increase the market share in 2 zones of Guadalajara. Once this strategy was established, the commercial manager applied tailored strategies for the commercial department.

4.6 Implementing and monitoring action plans
Using the goals defined in the action plans, the location and commercial managers applied Gantt charts to define activities, responsibilities and deadlines to complete the strategic objectives. For each goal, the intelligence cycle was used to compare actual versus expected results. This cycle also helped to detect new opportunities or threats in the industry that should be taken into consideration.

5 Conclusions
Using the scientific method proposed by Hernández, Fernández and Baptista [2006] it was possible to analyze these two disciplines incorporated in the methodology. The proposed methodology integrates the environment understanding with the planning system of the company by creating strategic plans to constantly monitor competitors, customers, markets trends and business opportunities in a 10-step process. It should be noted that the inter-functional part of the Hoshin Kanri planning system should be introduced in the methodology process by empowering key business processes to meet customer demands and keep the business competitiveness. Another important aspect is that the model should be modified to be successfully applied in other companies given that the time cycle and the size of the company is different from one organization to another. A worldwide company with thousands of employees will take more time to apply the model, compared with a small local company.

The application of the methodology in the company X was successful, a detailed action plan was designed with a broad knowledge of the environment. This business plan established keys objectives of the company, a detailed process to develop a market research and an action plan that completed each objective and goal with a big employees’ contribution.

Once the methodology was applied, market share of Company X in the housing and commercial industry increased by 2%, one plant was relocated to satisfy latent demand and improve coverage, and negotiations with 3 key clients were started with exclusivity contracts.

We are convinced that the integration of Competitive Intelligence and the Hoshin Kanri planning system in one methodology could help companies to currently create more competitive action plans.

6 Acknowledgements
We would like to thank the concrete company, X, for their valuable support and information needed for the development of this research.

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Marginalizing the periphery: enhancing competitive awareness
by looking less hard

Michael Neugarten
Manager, Competitive Intelligence
Israel Aerospace Industries
Israel
mneugarten@gmail.com

Abstract
Despite an understandable organizational tendency to over-focus, Competitive Intelligence, which seeks to understand the organization’s external business environment, needs to take a wider perspective. Day and Schoemaker [2004, 2006] declared it was time for organizations to focus on the periphery; but to really benefit from the periphery, one must actually resist this temptation, and look less hard, and in a less focussed manner. Analogies with human vision show how marginalizing the periphery can actually enhance CI insight.

Keywords: situational awareness, periphery, defocus, visual analogies, looking less hard

1 Introduction
Much of what passes for modern-day Competitive Intelligence, at least regarding Collection, is akin to looking for one’s keys under the lamp post. This is increasingly common in the so-called Internet age, where the tendency is to seek more and more information (not least because it is now so easy to do so), and focus more and more on what one is seeking (as evidenced by the use of keywords). This trend is often implemented or influenced by information scientists who themselves are often implicitly taught to look for what they’re looking for, and that focused search (which returns as few ‘hits’ as possible) is to be preferred to ‘simply’ wandering around.

But in a paper that is still relevant, despite having been first published almost thirty years, and incidentally having nothing ostensibly to do with CI, Feldman and March [1981] observed that although organizations complain about a lack of information, they constantly seek more, and this, while failing to use what they already do have. This state of affairs must surely sound familiar to many current CI practitioners.

This tendency to over-focus leads, when viewing one’s external competitive environment, to the neglect of the periphery, even though it is a key source of weak signals and of what shortly will be important and require attending to [Weick and Sutcliffe 2001; Neugarten 2006].

Some management researchers and practitioners, such as Day and Schoemaker [2004], have realized the importance of the periphery and now seek to focus organizational attention on it. But this call to focus on the periphery in itself negates the characteristics of peripheral vision that are so important to humans – namely motion detection, the ability to notice
small changes, and the ability to process information subconsciously before we are required to consciously attend to it [Zeki 1999, Findlay and Gilchrist 2003]. **Focusing** on the periphery thus causes the very characteristics that we can usefully exploit from unfocused awareness of the periphery to be lost as the price we pay for yet more focusing.

### 2 Objective – the need to marginalize the periphery

In this paper, I propose that there is utility to be gained in **marginalizing** the periphery, that is, in keeping it deliberately **unfocused**. In an earlier paper [Neugarten 2003] and in my doctoral thesis [Neugarten 2008b] I explored the use of optical and visual analogies and metaphors to understand how better to enhance awareness and noticing in the practice of Competitive Intelligence.

Analogies with human vision are used here to show how organizations can make better use of their peripheral vision in trying to make sense of their external competitive environment. As I have previously pointed out [Neugarten 2003], we see to make sense of the world around us [Zeki 1999] but conduct CI to make sense of the business world around us [see also Weick 2001 who discusses our attempts at sensemaking].

Despite those who still believe that more intelligence is gained by gathering more information, non-intuitive approaches such as looking less hard, looking for what is not there, focusing less, wandering around in one’s search, and drawing on concepts of peripheral vision, are shown to be effective ways towards enhancing noticing.

The prevailing and dominant organizational tendency is to privilege the central or the focused, which makes any attempt to ‘look around’ and defocus or back off seem counter-intuitive at best.

Ways of stepping back from what we are observing will be discussed. These have the advantage of ‘making the familiar strange’, as the German romanticists of the 18th century would have it, thereby opening ourselves up to the wonders of surprise and serendipity. It is not easy to implement this ‘defocus’ in many ‘real’ organizations, where surprise is often discouraged and even feared [Cunha et al 2006], but has nevertheless proven to be of utility in sensing and generating new business opportunities.

### 3 Visual processes and peripheral vision

Much can be learnt from our own visual processes. **Human eyes possess foveal, focused, central vision and also much wider peripheral vision.** Foveal vision provides our main (colour, daytime) viewing capability, used for exploring the world, reading, looking at something. It is what we use when looking at anything, reading, recognizing other people, and when asked to read eye charts at the opticians.

#### 3.1 The need for a trade-off between foveal and peripheral vision

But our foveal vision covers only an infinitesimal part of our visual field, much less than 1 percent of the visual field, and this accounts for the need to scan our field of view and the importance of not neglecting peripheral vision. There are good ‘engineering’ reasons for this. Our brains would have to be far larger and heavier were our vision to be uniformly of the quality we experience with our foveal vision. Because our eyes can move, in heads that can turn and on bodies that are able to move in our environments, we are able to make the trade-off between a small but highly accurate, central, focused, foveal vision, and a much wider spread of peripheral vision.

Were our eyes to have constant high-acuity vision (of the quality exhibited by the fovea) over the entire retina, the human brain would have to weigh some ten tons [Findlay and Gilchrist 2003, 5]. An eye capable of scanning and angular motion in the skull, coupled with head and body
movements is no coincidence or luxury, but the only way that a high performance visual system “can combine high resolution with the ability to monitor the whole visual field.” This represents a trade-off between high-performance in the central foveal area, coupled with less effective resolution and colour imagery out towards the periphery. But peripheral vision provides some advantages: enhanced sensitivity to small changes, flicker, and movement sensitivity. In those activities where variables connected with temporal change are involved, peripheral performance exceeds that of central, foveal vision.

3.2 The Grand Illusion and Active Vision

For many years, the role of peripheral vision was ignored, and eyes were assumed to be static, viewing a central, focused area, and there was an implied assumption of constant and immediate focused vision over the entire field of view. This is now known to be far from an accurate view of how our vision works, and the notion that we merely open our eyes and see everything in full-colour and at the highest acuity, has been termed the Grand Illusion [Noë 2002].

A fundamental neglect in previous passive vision studies has been the inhomogeneity of the retina. Human vision is at its best in a limited foveal area which extends out to an angle of about 1°, and image quality degrades rapidly as the object of interest is to be found further and further out towards the periphery of our vision.

Findlay and Gilchrist’s insight is easily stated [2003, 1-2]: “the (previously ignored) movements of the eyeballs are a fundamental feature of vision. … We have the subjective impression of an immediate, full detail, pictorial view of the world [but] are prone to forget that this impression is an illusion.” Detail in which we are interested is there for the seeing, being “potentially available in the environment” [their emphasis]. The illusion derives from our ability to direct our eyes effortlessly and almost instantaneously to any desired location. What directs our attention to a particular part of the environment is noticing something of interest.

Recent moves towards what is now called ‘active vision’ [Findlay and Gilchrist 2003], take this into account, and explain the utility of peripheral vision as a precursor for foveal attention. In human vision, it is now appreciated that peripheral vision helps provide the context for what we attend to. Despite its (much) lower resolution and acuity, and almost total lack of colour vision, it is peripheral vision that signals where next to look and direct foveal vision and attention, and provide the necessary information for subsequent eye motions to bring the desired object of interest into the foveal (high acuity) region of vision.

Visual tests show that incongruities are picked up quickly when objects are in peripheral vision [Gilchrist 1999], and this means that from a CI perspective we should strive to keep them there, so as to be more attuned to such incongruities. Peripheral vision is thus seen to be akin to a scout, providing early-warning signals, an indicator of things to come. What we subsequently attend to is generally seen first in our peripheral vision. The same may be true for our organizational vision.

4 Organizational aspects of peripheral vision

In many organizational and business situations, (peripheral) context is often seen as a distraction and a nuisance detracting from the main organizational task of focusing on whatever the organization is deals with. But organizations, like retinas, are not uniform: some in the organization have more focused vision, while others are more active on the organizational periphery, and others may be more attuned to the outside environment, able to feed this back in to the organization as boundary-spanners, acceptable to those external and internal to the organization. Organizations, like
intelligence agencies, should cultivate both focused and peripheral vision.

4.1 Is more better?

Many still believe that ‘more is better’. A workshop on Peripheral Vision in Organizations [Day and Schoemaker 2004] found that while organizational peripheral vision is necessary it may often be lacking. Two papers in that workshop called for gathering more information ‘from the external business environment’, and processing it faster while focusing resources on peripheral information [Haeckel 2004; Huston 2004]. The problem with this approach is, in CI as in human vision [Neugarten 2006], that focusing on the periphery ‘kills’ or ‘destroys’ the very periphery that is sought [Cunha and Chia 2005]. For the unique characteristics of peripheral vision (providing contextual information and enhanced sensitivity for change and movement) to make themselves felt, the periphery should remain deliberately vague and unfocused. This is not to imply that detection of surprise and minimizing the damage caused by mistakenly ignoring peripheral signals are not important in themselves. For a further reflective discussion of the role of peripheral awareness in strategic thinking, see Chia and Holt [2007].

4.2 Organizational viewing and environmental scanning

Organizations can use peripheral vision to guide and channel subsequent attention for the high-performance detailed vision, gaining awareness of the surroundings, and heightened sensitivity to changes. However, since they usually have a prevailing dominant logic, what concerns us here is the downside of dominant logic.

Not only is dominant logic a filter governing how and what is seen, but it is also a blinder constraining vision and thought processes and limiting via the possibilities that the organization is able (or willing) to see. The prevailing dominant logic in an organization may act as a blinder restricting peripheral vision [Prahalad 2004]. Neugarten [2006] dealt with this in a paper discussing foresight, and whether it is wise to look forward at the expense of looking around at the organization’s periphery.

Being able to determine an organization’s blind spots based on knowing or understanding its dominant logic would be a considerable asset. But even increasing organizational awareness as to the existence of blinders and blind spots would be a major step forward for many organizations.

Anyone who drives or plays a sport uses their peripheral vision (perhaps without consciously realizing it) to identify imminent threats (or opportunities) which may be seen out of the corner of one’s eye. Similar skills are needed in organizations.

5 Advantages of peripheral vision

Although we put blinders on horses specifically to cut down their exposure to peripheral signals and prevent them from ‘looking around’ or being startled, we would not normally wish to put blinders on ourselves in business, sport, or when driving. Without peripheral vision, we would constantly be in a state of surprise, having no forewarning of what is entering (or about to enter) the small central area of our foveal, high-acuity vision until after this had occurred.

This would be akin to a kind of tunnel vision, which no serious organization wants to be accused of suffering from. To overcome this, “the way forward is paradoxically to look not ahead, but to look around” [Brown and Duguid 2000, 8; Neugarten 2006]. By setting a context and gist for what we are seeing and are about to see, our peripheral vision, by performing an early-warning pre-scanning of the environment, allows us to better direct our attention, reducing or being more ready for surprise.

5.1 Using visual metaphors and analogies

The use of visual metaphors or analogies to teach CI can usefully help develop
awareness [Neugarten 2008a], informing people as to the contribution of peripheral vision, while weaning them off too-focused, too-categorized looking which seeks information instead of insight. Becoming more aware, a person’s thinking changes: they ask more questions, become more sceptical, see more alternatives, and examine their own and others’ underlying assumptions, while improving their ability to notice anomalies [Kuhn 1962/1996, 62-65; Trudgian 2001].

Anomaly and serendipity are not popular among managers, but should be embraced to elicit new ways of thinking and seeing.

5.2 The desire for more information

Part of the problem arising from categories and categorization is connected to the incautious use of taxonomies and keywords, which are now an integral and almost inevitable part of information science and internet and business database searches.

But these have certain problems: they are usually nouns not verbs, implying a division of the world into ‘things’ not processes [Chia and MacKay 2006]. This division constrains us to look in certain ways at business information. It leads to a ‘look for what you’re looking for’ philosophy and induces a certain arrogance: if a search for certain keywords returns no hits, we are quick to assume that what is sought does not exist. It is as though we reify the keywords and then let them ‘get in the way’ in our information-seeking. Over-emphasis on keywords, alerts that work according to keywords, and personalization, all reduce our serendipitous exposure to peripheral material and the possibility of being surprised; these are all dangers that a cautious and humble CI practitioner will try to avoid.

6 Getting individuals to notice better – by backing off

As with peripheral vision, the ability to discern changes and anomalies is central to CI, and is also a critical component of entrepreneurial initiative as seen in the Austrian school of economics, as argued by Kirzner [1973].

The urge to focus in on information is still a bugbear of information professionals who have frequently stressed the need to seek what they need, ensure definite and sharp definitions and keywords, and reduce exposure only to what is deemed a priori to be relevant.

6.1 Learning from foreground and background in art

In vision and art, or at least in Western art, a painter or viewer selects a significant ‘figure’ to concentrate on while neglecting or marginalizing the insignificant (back-) ‘ground’. This division is much less pronounced in Eastern art, especially in the so-called Japanese style of ‘flung paint’. Gestalt thinking, though necessary and efficient, pushes (in what Ehrenzweig [1967/2000] refers to as a compulsion) in this direction as we (tend to) select the most compact, simple and coherent pattern, but this leads to generalities and ignores syncretistic individuality. Neither artists nor CI practitioners should fall into the over-focusing trap.

Like peripheral vision in the human visual system, Ehrenzweig’s syncretistic vision is sensitive to small cues and changes. This is important because “superficially insignificant or accidental looking detail may carry the most important unconscious symbolism” [Ehrenzweig, 1967/2000, 20-21]. In a rebuttal for those who prefer to focus on and look for (and at) what they are looking for (and at), he writes that syncretistic vision “impresses us as empty, vague and generalized only because the narrowly focused surface consciousness cannot grasp its wider more comprehensive structure.” Its non-intuitive and counterproductive nature means that it is often rejected without fully understanding the advantages it can bring.

As an example of the interplay between foreground and background, and by
implication, focused and peripheral, Chia [2002] has used the example of the well-known map of Italy and the Adriatic coastline to show how we may consciously need to move between viewing the figure and (back) ground. As students of geography, we focus on the land mass seeing the familiar shape of Italy, but as sailors we look primarily at the sea and the coastline. But whichever way we look, we make one or other aspect of the (back) ground invisible.

Undifferentiated, unfocused glances are what are needed: a description found in Gunaratana [2002, 138-139] states: “[w]hen you first become aware of something, there is a fleeting instant of pure awareness just before you conceptualize the thing, before you identify it. ... That flowing, soft-focused moment of pure awareness is mindfulness ... This is very much like what you see with your peripheral vision as opposed to the hard focus of normal or central vision. Yet this moment ... contains a very deep sort of knowing that is lost as soon as you focus your mind and objectify the object into a thing.” Vipassana meditation, in Buddhist teaching is one means to prolong the moment of awareness, engendering mindfulness as non-judgmental observation.

Peripheral vision needs to remain just that. A framework allowing the periphery to contribute what it is best at – noticing weak signals, small movements, and providing an early-warning of impending changes – is needed, but without forcing the issue.

6.2 The smile is in the periphery

Looking and focusing less strongly may help. Consciously using peripheral vision makes us more attuned to changes: some things are best (or only) seen with peripheral vision. Work by Livingstone [2002] on Leonardo da Vinci’s Mona Lisa shows that her enigmatic smile disappears if one looks straight at her mouth and lips, the assumed or expected ‘site’ of the smile.

To demonstrate this, Livingstone filters the visual information in the painting into its constituent spatial frequencies – the spatial equivalent (in light, optics, and imaging) of temporal frequencies (used in acoustics, electronics, and telecommunications). High spatial frequencies of light and shade carry detailed, precise information, while low spatial frequencies carry more general indications of light and shade. This is equivalent to a division into focused (detailed), and trend (more general) information, with high spatial frequencies being equivalent to what is seen when we focus on something, and low spatial frequencies equivalent to and carrying information about slower and less abrupt changes in the environment or image. Only by taking in the facial periphery (the Mona Lisa’s cheekbones) can one appreciate the smile, which derives from the play of light and shade on the subject’s cheekbones and face. The enigmatic nature of the smile arises from its being seen by our peripheral and not our foveal vision.

7 Different kinds of noticing

The importance of peripheral vision has been stressed throughout this work. The implication has been that individuals and organizations neglect peripheral vision at their peril, sometimes by focusing too much on what they seek or on what they are looking at. The central is privileged over the peripheral, attracts more attention, and is generally regarded as more salient.

Seeking insights to help people see in new ways is not confined to any one discipline. A different and humbling insight to peripheral vision can be found by looking at a class of people for whom direct vision is a significant problem and for whom peripheral vision is preferred and enhanced as a result – those suffering from different types of autism. One early indication for the possibility of autism in babies is a reluctance to engage in eye contact, and avoidance of eye contact in small children may indicate autism-related
problems. For such people, being stared at or having eye contact with others can represent a massive information overload, and they may feel discomforted and threatened by this, leading them to rely more on their peripheral vision than on direct eye contact.

The ability to see and notice differently has made unexpected and useful contributions: Grandin, herself autistic, and a professor of animal science, uses her own sensory capabilities to enable her to notice things that others do not. Seeing what others fail to, she uses this ability to design solutions to problems based on these failures of noticing. She has demonstrated that some autistic people may have an excessive preoccupation with detail while being unable to see a wider picture, in ways similar to animals [Grandin and Johnson 2006]. By looking through animal eyes and listening with animal ears (thus becoming more aware of harsh or startling background noises), she is able to notice aural and visual details that ‘normal’ people normally gloss over. As a result, she was able to recommend successful redesigns of livestock facilities via changes in layout, materials, and colour and lighting, which significantly reduce animal stress (which could otherwise cause injury to animals and workers). This is one example where changing the way we look at something can cause different features to become more prominent, allowing us to sometimes arrive at quite different conclusions about the environment we perceive.

Williams [2007], herself also an autistic writer and presenter, has also written about the effects of her peripheral vision on her and her lecture audiences. She finds herself looking 40-80 degrees off to the side of her audience or interlocutors to avoid eye contact, yet still picking up many signals of individual and intra-group body language that others miss. She suggests that ‘forcing [autistic] people to learn eye contact’ may be inappropriate, and that they should be allowed and encouraged to develop their peripheral vision instead.

Some autistic people may have a more holistic view of a computer keyboard or display, resulting from their enhanced peripheral vision, and such skills can be put to use for certain applications. Grandin [1996] writes of one autistic woman whose ability to recognise patterns made her one of the most capable technicians in a laboratory identifying different cancer cells, noticing abnormal cells faster and more positively than other people, because they just jumped out at her. Other autistic people may have excellent visual memories, especially for detail, or be less capable of differentiating foreground from background [Bogdashina 2002], which in some activities might be a major advantage, as it frees them from privileging the one over the other.

I mention these examples to show that other fields entirely can nevertheless inform and enrich our understanding of ways in which awareness can be enhanced; CI practitioners can then adapt and use these ideas in our CI activities.

8 Benefits of focusing less

Cultivating a less-focused approach to Collection in one’s CI practice can allow weaker signals to emerge and increase the likelihood of their being noticed. Just as human peripheral vision has a greatly enhanced sensitivity to small motion and changes, despite suffering from highly-degraded colour vision and poor visual acuity, so to can an awareness of the periphery, without overly concentrating on it or focusing on it provide enhanced sensitivity to small changes, awareness of the beginnings of trends, and anomalies.

The ability to be aware of anomalies is a necessary skill for any CI practitioner. It is through anomalies, cracks, disparities, surprises, and the unexpected, that we may learn of new issues, or areas worthy of further exploration. As Kirzner noted [1973], an entrepreneur is someone who becomes aware of something that others do
not. So too, the legendary and fictional Sherlock Holmes “saw what others did not.” It is this different way of ‘seeing’ that is so important. Otherwise, as Hamel has pointed out in an interview with Kurtzman [1997], not only do people in the same industry all see the same things, but they all tend to become blind to the same things.

Recent events in many sectors of the world economy have shown how easy it is to become blind or unaware to what is going on around us, until it is too late to react in a timely and satisfactory manner.

9 Closing remarks

This paper has attempted to show the utility of adopting a less-focused approach to CI, counter-intuitive though this may be to many practitioners and information scientists. By drawing on visual analogies and metaphors and comparing organizational and human vision, I have shown that the periphery is best left alone, in the sense that when one does not focus on it but is simply more aware of its existence, one can reap the maximum benefit from its inherent properties. Chief amongst these is an enhanced ability to sense small changes and motions, and thereby direct our human or organizational attention to what we should next be attending to.

10 Acknowledgments

This work derives from part of my doctoral thesis in business administration [Neugarten 2008b], conducted at the Swiss University of St Gallen, which dealt with noticing, as applied to the practice of competitive intelligence. I am grateful to my supervisors Professor Chris Steyaert and Professor Martin Hilb, and to Professor Robert Chia, then at the University of St Andrews, for many fruitful discussions.

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Enterprise 2.0 as a way to facilitate, enhance, and coordinate intelligence work within large organizations: A Case Study at Toyota Material Handling Europe

Jon-Erik Olsson and Jimmy Sandell
Uppsala University
Sweden
jimmy.sandell@gmail.com

Abstract
Unstructured information is an essential ingredient of Business Intelligence, and in order to improve issues of handling unstructured information, there is a need for change of the organizational culture in many large industrial organizations, which are shaped by a mindset stemming from the 20th century, built upon the concept of central control. We present the technologies connected to the concept Enterprise 2.0, as tools that could help organizations to improve their Business Intelligence work. The case company, Toyota Material Handling Europe, is a large industrial organization with a functional structure. Work that can be categorized as “intelligence work” is performed within most corporate functions, but lack of coordination results in double work and inefficiency. We see that the Enterprise 2.0 concept could be successfully used to help overcome these issues.

Keywords: Business Intelligence, Enterprise 2.0, Organizational Culture, Information Handling, Unstructured Information.

1 Introduction
Recently, articles have emerged covering the entry of Enterprise 2.0 technologies and concepts into the business sphere, as a natural ingredient in companies in general and in business solutions in particular. When investigating conceptual systems support solutions to meet the needs for facilitating information handling improvements for intelligence purposes, we have come to see this as something that ought to be interlinked. This connection is not made in any of these articles (known to us), which is why we would like to highlight and elaborate on the improvements that could be made possible with such an approach. However a classic pitfall is that any problem can be solved by implementing technological solutions without acknowledging the needs for necessary cultural changes, changes in the way of working or changes of the organization.

The topic for this paper is sprung out of a Master Thesis (2x30 ECTS) written by us, the authors, centered on a Case Study conducted at Toyota Material Handling Europe (TMHE) and the initiated process of defining and enhancing Strategic Business Intelligence. Together with a multi-dimensional structure in order to better capture the complexity of the subject, we argue in the report that Enterprise 2.0 technologies could be used in order to enhance, facilitate, and coordinate intelligence work.
1.1 Methodological remarks

The paper is a product of our six month, full time engagement in the project at TMHE. For the project, a qualitative research method was used. The material was primarily gathered via two extensive rounds of interviews with 16 members of top and middle management at TMHE. An Information Needs Analysis built upon Per Frankelius' World Mapping Method was also carried out. Prior to the interviews, a literature study was performed in order to build the theoretical framework of the Thesis. The literature study followed the overall structure of the Thesis and was divided into the three parts Business Intelligence, Information Needs Analysis, and Information Handling, with an additional section covering Systems Support for Handling Unstructured Information.

The material for the part on Business Intelligence was written literature from this emerging field of study together with primary sources through contacts with researchers working with Business Intelligence. The major part of the material on the Information Needs Analysis is built upon literature discussing this type of analysis. The Information Handling section is primarily made up of literature covering theories of information sharing, information ownership, distribution/retrieval of information, and how organizational culture affects information handling. The overview of information systems for improving the handling of unstructured information was built upon literature and Internet sources. It also contains primary source material from interviews made with a provider of system solutions.

This article is mainly built on the literature that made up the Information Handling section together with some material from the overview of information systems for improving the handling of unstructured information.

1.2 Business Intelligence as an umbrella concept

Academically, Business Intelligence (BI) is a rather unexplored research field and within the business context BI leads an equivocal existence. BI is foremost used either as a term capturing other intelligence terms (e.g. Competitive Intelligence, Competitor Intelligence, and Market Intelligence) or as a denotation for technical decision-support systems [Olsson & Sandell, 2008]. We have approached BI as an umbrella concept covering both these offshoots, which also is valid for the situation within our case company. However, independent of the level or context, the overall purpose of BI can be simplified as delivering support to business decisions.

One major challenge affecting Business Intelligence work is the problem of organizing and making use of the continuously growing amount of information in many organizations today. A lot of this information is unstructured; produced, received, and collected in personal computers, databases, email servers, external hard drives etc. The issue of unstructured information is tightly tied to the issue of information handling in general, since ineffective or unsatisfying information handling not only will make the effort of finding the unstructured information harder, it can also make structured information unstructured. This is something that we saw in our Case Study [Olsson & Sandell, 2008].

1.3 Using Enterprise 2.0 for enhancing Business Intelligence

The term “Web 2.0” can be defined as an agglomerate of Web technologies and concepts that enhance information sharing,
creativity, and collaboration among its users. The foremost examples of Web 2.0 concepts are Wikis, Blogs, social-networking sites, and video-sharing sites. In order to separate the rise of these concepts within a company context, the term “Enterprise 2.0” is often used. Basically Enterprise 2.0 is a term promoting collaboration and information sharing in an organization by applying Web 2.0 concepts [Olsson & Sandell, 2008]. One definition is made by McAfee [2006], who rather than listing the concept technologies, specify six key components Enterprise 2.0 solutions should contain:

Search. No information system is of any value if its users do not find the information they are looking for. A study performed with 600 American companies shows that knowledge workers spend in average 3.5 hours per week looking for information within the organization, without finding what they are searching for. Because of this they spend another three hours re-creating this information, even though it already exists [IDC, 2005].

Links. McAfee [2006] argues that hyperlinks help to build a good structure of online content as well as guiding to the most important information. He means that the best pages are also the most linked a theory that e.g. Google uses when prioritizing search results. The difference in companies and organizations is that it is difficult to maintain a rich link structure when the content and links are being published by a small group of intranet administrators [Olsson & Sandell, 2008].

Authoring. In order to enhance the quality and create convergent content, McAfee [2006] believes that information should be created by a large group of individuals rather than a small. He states that “most people have something to contribute, whether it’s knowledge, insight, experience, a comment, a fact, an edit, a link” [McAfee, 2006: p.24].

Tags. Today most categorizations of information in information systems are pre-defined by experts (in so called taxonomies). McAfee [2006] instead advocates folksonomies, which means a categorization system that is developed over time by the users of the information system. One example of folksonomies is tagging, i.e. one-word descriptions of the information in question. McAfee [2006] argues that the advantage of folksonomies over taxonomies is that they better reflect the information structure that people actually use instead of the structure that was planned for in advance.

Extensions. Extensions means that there is functionality in the information system to automate some of the work and to find patterns in the way the user uses the system or in the information retrieved by the user. One example is the online shopping site Amazon.com, which has a function that by analyzing the purchases made by others, gives recommendations i.e. “if you liked that, by extension you would like this”.

Signals. In order to keep track of changes or updates of information in a system, which can be cumbersome in an environment characterized by a fast growing amount of information, McAfee [2006] highlights technologies that provide signals whenever something is updated. One technology is called RSS, which generates a feed of information that keeps track of updates of a specific information source, e.g. a Blog. The users choose themselves which feed to subscribe to, and therefore they do not have to constantly visit the information source to see if there are any changes made. Instead, all changes to websites they are interested in will be presented in one location.

In practise, the Enterprise 2.0 platforms used today are made up by a seamless integration of the different core technologies, Wikis, Blogs, RSS, and so called Mashups21, into one single interface. Hansson [2008] means that it is when combining these; the best result can be achieved. He argues that one blog post might generate a new wiki page as well as

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21 Mashup is one kind of extension.
an edit in a wiki page might generate a new blog post. RSS feeds provide a simple way for keeping track of what is happening in the Wiki, in Blogs as well as in other information sources (e.g. competitors’ websites etc.) and thus is a simple tool for conducting scanning of the business environment. The information in the RSS feeds might also generate both blog and wiki posts [Hansson, 2008].

1.4 Industrial organizations and 20th century mindsets

Stenmark [2006] argues that many industrial organizations are shaped by a mindset stemming from the 20th century, built upon the concept of central control (with central authority, established hierarchies, and standardized structures). When information infrastructures such as company intranets were created, they came to reflect the norms and attitudes of the past. He means that the information is owned and maintained by an “information elite” that often does not have anything to do with the tasks of the information users. Stenmark [2008] uses the cliché “information is power” when describing the situation in many organizations today, where the organization (and thus the management) knows (or think it knows) what information its members need and they control the access.

Stenmark [2006] argues that it is impossible to determine the structure of information usage when having the “top-down” approach, since this only shows how the management wants people to use information, not how it is actually used. Because of this, he proposes the use of folksonomies instead of taxonomies (cp. McAfee [2006]). He describes that the taxonomies are reigning in traditional industrial businesses because of history and that this permeates how the entire information handling apparatus (sharing, finding, retrieving etc.) work.

Achterberg [2001] uses the term information hoarding for an adjacent phenomena. She means that it is often not the senior management that sits on the knowledge or information that is needed in order to meet the changing business environment, but people further down in the organization, and that information hoarding then is a sign of lack of trust. She means that it is important to revise how to encourage and provide incentives for the “hoarders” to share their information regardless of level.

1.5 Enterprise 2.0 brings change of the role of the user

According to Stenmark [2008], decentralization of the control of information is central in the concept Enterprise 2.0. He means that the concept is more about the shift of the role of the user, i.e. a changed behavior, rather than about the technology in itself. It is about drivers that change how people interact with each other. The arguments of Stenmark [2008] are in line with those of Telleen [1996], who sees a possibility with new technology to switch the control of information from the assigned publishers to the creators of the information. He means that when users can retrieve and view needed information in an easy way when they need it, there is no longer a need to send information just-in-case, causing information overload situations. Thus publishing can be separated from automatic distribution of e.g. reports or meeting minutes.

Telleen [1996] also acknowledges that a new information infrastructure is not enough to shift of control of the electronic information management, a shift in attitude and culture is also necessary. Stenmark [2008] argues that the norms and attitudes that control the traditional industrial organizations are not the same as the norms that are the foundation for the

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22 According to Loshin [2001] information ownership means the control of information as an enterprise asset. This control is including not only the right to access, create, modify, package, derive benefit from, sell, or remove information, but also the right to give others access to the information.
Enterprise 2.0 concept. Here, information is created from a blank page by interaction between individuals who also use and need this information, which is why he argues that the information is owned by the users. He also claims that if an organization wants to take a step towards Enterprise 2.0; it needs to reconcile with the idea that information ownership should be distributed among all employees. The difficult part of turning an organization into Enterprise 2.0 will, according to Stenmark [2008], be the shift from a non-democratic top-down perspective of information ownership towards a democratic bottom-up perspective.

1.6 Generation shift will bring change in corporate culture

If an organization discourages the use of Enterprise 2.0 because they do not understand the concepts, there is a risk that this attitude repels young adults, which could be a major issue for the future, argues Stenmark [2008]. According to Hansson [2008] the necessary change in corporate culture is a matter of generation shifts in the organizations. When the Generation Y\textsuperscript{23} and later generations enter the working life they will organically change the culture for how information is shared and what tools are used. He means that the concepts of Enterprise 2.0 are a natural part of their everyday lives, which is why they will demand these concepts also in their work life. Stenmark [2008] shares this belief when claiming that the organizations of today are changing towards Enterprise 2.0 from below, when hiring young people. He argues that the young generations are brought up with the public Web and have different attitudes to new technology in general than older generations.

2 Toyota Material Handling Europe

In 2000, Toyota Industries Corporation (TICO) acquired the Swedish forklift truck producer BT Industries (BT). After the acquisition, both corporations continued to exist independently side-by-side until 2005, when an organization for all material handling operations of TICO was announced, where TMHE is the operational organization in Europe. One of the main objectives for TMHE has been the integration of the operations of former BT Europe and Toyota Industrial Equipment Europe\textsuperscript{24}. The work of

\textsuperscript{23} Generation Y does not have a univocal definition, but is often referring to people born between 1980 and the mid to late 1990s, who have grown up with information technology as a natural part of their everyday life.

\textsuperscript{24} Toyota Industrial Equipment Europe is a part of Toyota Industries Corporation.

1.7 The importance of information sharing

Hoppe [forthcoming] stresses that the personal network is crucial for transfer and creation of intelligence and knowledge. Even though all sources of information and intelligence have value; text-based information does not have the same power to penetrate as meeting face-to-face. Because of this, Hoppe [forthcoming] emphasizes the importance of utilizing what he describes as arenas in an organization, where knowledge is created or exchanged. Examples of arenas are public events e.g. conferences, third party organizational think tanks, regulatory organizations, internal or external R&D groups, sales meetings, discussion groups etc.

When discussing information sharing, Achterberg [2001] emphasizes the importance of having a business purpose of information sharing so that it is not shared just for the sake of it. Such sharing does not support business decisions or innovation, even though she acknowledges that a corporate culture that supports information sharing, in general, is ahead of one that does not. She argues that it is the engineer’s problem solving conversations by the coffee-machine that should be captured and shared in order for the organization to benefit from their expertise.
integrating the operations is an ongoing process; it has been completed in several countries, but not even started in others [Olsson & Sandell, 2008].

2.1 An industrial company with a functional structure

TMHE can be characterized as a company with a functional structure (see fig. 1). In a functional organization it is easy to miss out on the transfer of information between functions; a lack of an orchestrator role. If looking at the functions as islands, it becomes obvious that when an island is big enough the perceived need for communication with inhabitants of other islands decreases, whereas if the islands are small you automatically feel the need for interaction with others. At TMHE, the overall knowledge level is extensive; but since the corporate functions can be characterized as information silos, there is poor knowledge about what colleagues in the other departments are doing, and therefore the company risks wasting resources [Olsson & Sandell, 2008].

Figure 1 Organogram of Toyota Material Handling Europe [Olsson & Sandell, 2008]

The TMHE governance is built upon a high level of autonomy. The company is aware of the problem with wanting employees to take initiative and be autonomous, and therefore building little kingdoms of their own and then being upset when they feel somebody else is touching upon what they regard as their own property (cp. the “Not Invented Here” Syndrome). We saw that this had a major impact on information handling in general and for the view of a Business Intelligence function in particular [Olsson & Sandell, 2008].

The results of Business Intelligence work in the organization are not stored in a central source of intelligence/information today. Instead it is mainly stored on local hard drives or in personal computers. A common view from our respondents is the need for coordination of information, even though the opinions differ whether this should be an organizational unit, or a central information system. Another issue is that the information is often in different formats and uses different definitions. Before being able to assimilate the information and perform analysis, it has to be processed, challenged, and/or restructured. The Case Study also highlights the lack of sufficient tools for facilitating information handling connected to Intelligence work performed within the organization [Olsson & Sandell, 2008].

2.2 Business Intelligence as coordination and handling of information

From the Case Study, we know that the coordination role is prevalent among the respondents and it is often connected to information, analysis, and cross-functionality. The coordination is also connected to resourcefulness and the expected task of avoiding duplication of work within the company. Another frequent theme is as an extra resource, e.g. for finding new potential in already gathered data from the corporate functions. Information handling is another evident area of concern associated with Business Intelligence, e.g. as the handler of external information or to facilitate strategic use of operative information. Our respondents also highlighted the responsibility to act as an assurer of necessary structures and availability for different profiles at different levels in the company [Olsson & Sandell, 2008].

3 Discussion
We saw that the heterogeneous information sharing culture at TMHE needed to be transformed into a more homogenous one, with clear policies for how information is to be shared. An aspect of the cultural differences when it comes to sharing information is given by these two different views: Is information shared to the extent of what is necessary to share, or is information shared to the extent of what is possible. This is illustrated with the example in fig. 2.

**Case 1.** You are going on a holiday with your family and you tell them that they have to be packed and ready by 8AM tomorrow morning. The only beforehand information they get is that they are going to a country where they can swim, the temperature will be around 25 degrees, but the evenings are cold, so bring a sweatshirt.

**Case 2.** Tomorrow morning at 8AM we are leaving for Spain. We will stay in an apartment and spend time on the beach. The temperature will be around 25 degrees. Sometimes it will be raining and there will be cold evenings. We will also go to a certain restaurant, which is why formal clothes need to be brought.

The point is that the difference between the two cases is bigger than it might seem. With the extra information in the second case you will be more prepared and thus find it easier to adjust to new circumstances (cp. def. of BI). We mean that a conclusion on which of these strategies to use is necessary and we have seen from the Case Study that it is especially important to have a common view within the management team, because their views will be spread throughout the company.

However, by clear policies we do not mean that it should be clearly defined exactly which, when, how, and to whom information is to be shared. We believe that people need to take control over their own information supply, mainly because no one can possibly know what information other people need, but also in order to avoid information overload (cp. Stenmark [2006], Stenmark [2008], Telleen [1996]). In line with this, we highlight that information is to be shared by making it available, not by sending it to others. Ensuring transparency between different corporate functions is also essential. In order to make this feasible, it has to be clear what information can be shared and what information cannot. Our standpoint is that information should be made available to the extent possible and not pushed to the final recipients. We also see the potential of Enterprise 2.0 as being the incentive that Achterberg [2001] inquires for the “information hoarders” to share their information. When the Enterprise 2.0 technology has a real breakthrough and becomes a part of everyone’s modus operandi, an “information hierarchy” will be created along with the classic organizational hierarchy. This means that the “true experts” will make up this information hierarchy, regardless of where in the physical organization they are or on what level.

It is of great importance to set up cross-functional frameworks and structures for information and knowledge sharing (what is referred to as arenas by Hoppe [forthcoming]), since the personal networks might not be fully developed over the organizational borders. In the case of TMHE, this is very important considering that it is a newly formed organization with its roots in two traditional industrial companies.

In the best possible world, arenas for all members of an organization to meet and exchange information and knowledge would be created. However, as we saw in the Case Study, TMHE as a large multicultural organization, Enterprise 2.0 would be a way of creating digital arenas where information can be shared, accessed, and organized in an effective manner. It is also important to realize, as argued by Stenmark [2008] and Hansson [2008], that Enterprise 2.0 is natural part of the ways of working for young adults, which is why it is important to implement these concepts.
in order to attract younger generations. This is especially important in traditional industrial organizations.

For teams or groups working with Business Intelligence, heavy on unstructured information, we see Wikis as an effective tool for structuring of information and at the same time, they allow the possibility to cooperate within the group even if participants may not be located at the same place or working within the same function. This will ensure a common picture and the advantage of always having access to updated information. We see Wikis as a possible tool for all teams or groups in the organization (virtual or physical does not matter), because of the ease of use and set up.

Wikis could also play an important role in the continuous Business Intelligence work of building up a knowledge base. When storing information in a Wiki, it is easy to update the information whenever necessary. This means that the latest information on a specific topic always is available, and thus not only published in an updated report at set dates. This also enables effective information gathering through information pull. Areas that would specifically benefit from using Wikis are groups working with competitor analysis and mergers and acquisitions.

For RSS there are several potential areas of application. Monitoring activities regarding information available on the Internet or intranet could be performed through the use of RSS tools, in order to avoid having to frequently visit each web site. Examples of sources are monitoring of press, sites containing logistic theory, competitors web sites, web sites of vertical industries, and information services of different institutions.

4 Conclusions

In a large industrial organization, issues of information handling are deeply rooted in an organizational culture and ways of working characterized by a top-down perspective that cannot be changed overnight. We think it is important for organizations to work towards a more bottom-up perspective of information handling, where the user takes the power of his or her information supply by primarily an information pull strategy.

We see the use of Enterprise 2.0 as a way of enhancing, facilitating, and coordinating intelligence work, by enabling the use of knowledge and resources in more efficient ways. When implemented by an evolutionary approach (starting in small teams and growing through viral marketing), we mean that Enterprise 2.0 can be a catalyst for necessary change of organizational culture. Enterprise 2.0 is also an interesting factor for attracting Generation Y (and younger generations), which demands and “lives” this way of working.

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Representing territory resources within a territorial intelligence system

Maryse Salles*, Gabriel Colletis**

*IRIT – Université de Toulouse (UT1) France
Maryse.Salles@univ-tlse1.fr

** LEREPS - Université de Toulouse (UT1) France
Gabriel.Colletis@univ-tlse1.fr

Abstract
This paper focuses on the development of a territorial intelligence system and more particularly, on the representation of territory resources in the form of an ontology. We acknowledge that the structure of the information used by public decision-makers restricts choices when it comes to territorial economic development policies. The work on the representation of resources is therefore preceded by an analysis of the different visions of the resources already present in the field. Two ‘doxai’ are thus identified as coexisting in the texts and in the actual practice. In order to respect the diverse views, we decided to include both doxai in the ontology, hence forming a polydoxical ontology and it is from this that any excerpts have been taken.

Keywords: territorial intelligence, territory resources, public decision-making support, territorial intelligence system engineering, ontology, polydoxy.

Introduction
The research as presented here concerns first and foremost territorial intelligence as a cooperative system for supporting public decision-making via the implementation of specific information systems: TIS (Territorial Intelligence Systems). Territorial decision-making assumes its own characteristics and requires specific tools to maintain it (Joerin, 2008). When it comes to territorial economic development, an TIS, by way of its ‘supporting public decision-making’ function (policy definition, implementation, assessment), must participate in the development of the territory, and directly or indirectly, in the development of companies.

The stance we have adopted here is one of TIS engineering, and also, as both issues are closely related, one of public policy engineering.

TIS can come in different forms, but the information that they are likely to contain is always organised at the core of a structure. The latter will determine the main categories and objects via the information will be understood. According to the particular context, this structure can take the form of data models, ontologies or even simple nomenclatures.

As is the case for all information systems, how the information is structured in an TIS reflects a representation of the world which cannot be compared to a
simple ‘objective’ coding of a unique and pre-existing reality. It is a social construct - the formalisation of a particular vision of the world. The design of an information system and knowledge engineering (speaking more generally) are widely recognised within the academic community as being ‘constructivist’ approaches (Masolo et al., 2004, Charlet 2003, Aussenac-Gilles, 2006).

How the information is structured via those categories that are proposed and those categories that are not proposed influences policies (Salles and Colletis, 2007). In the case of TISs and consequent-ly, supporting decision-making in terms of economic territorial development, we must pay particular attention to the “strange loops” (Hofstadter, 1979) that link up the information with the decisions (Le Moigne, 1991). The representations inscribed in the information systems will in effect restrict both the thinking and the action. We can note as illustration that the nomination of a sector within the information structure will make possible any actions directed towards those companies known to belong to this sector. By contrast, not nominating a sector will make this sector invisible to public decision-makers and hence inaccessible in terms of specific actions. Defining an ‘employment rate’ indicator to replace that for the unemployment rate (cf. the Lisbon Strategy) will shift actions away from the latter towards improving the former, and developments in the measured rate will reinforce how actions are targeted. Here we can find the performative aspect of the nomenclatures; (Boydens, 1999) reminds us that they have always been “situated socially and historically”, and that they have “performative effects (that) influence the real, which itself has been standardised”.

The remit that Regions have in relation to territorial economic development has become very wide, and the social and economic issues associated with the decisions in this field are primary. The development of a system aimed at supporting the decision-making process must take into account the performative nature of the categories included in the system.

Our work comes within the framework of the CAVALA research project; this project focuses on supporting the definition of assessment indicators for actions undertaken by the Midi-Pyrenees Region (France) in terms of economic development. It is being financed by the Region and has the aim of developing a cooperative method in the construction of these indicators. The key aspect to the project approach is the formulation of a common language that can be shared by the relevant stakeholders. The role of such a language is to represent the main working objects and concepts within territorial economic development from the perspective of supporting public decision-making. This language takes the form of an ontology for territorial economic development. This ontology has specific applications in the CAVALA project where it is used in particular to determine certain indicators (no details are provided here).

This paper deals with the problems in identifying the objects and concepts for territorial economic development and describing them in the form of an ontology. In particular, it focuses on territory resources and their depiction within the ontology.

Part 1 highlights the key position occupied by resources in territorial economic development and in the development of companies, and provides some examples of the role that an TIS

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25 A person is considered to be employed when he or she holds one or two jobs regardless of the time spent doing this job/these jobs.

26 An unemployed person is a person who is without a job.
could adopt within this context. In the light of the complex relationships that exist between resources, territories and companies, it would appear necessary for policy makers to have access to an ad hoc resource typology, i.e. created with territorial economic development policy formulation in mind.

Part 2 proposes such a resource typology for a territory. Here two slightly different, but ultimately complementary visions of resources are presented in succession.

These two visions of resources are formalised as an ontology, first separately, then in an integrated way. Part 3 demonstrates the different stages in the work by providing excerpts from the ontology for territorial economic development.

1. Resources and territorial economic development

In this first part we will re-examine the issue of territory resources as it presents itself within the framework of a territorial economic development policy.

We will also raise a number of points on the link between mobility (rising) and the persistent phenomenon of polarisation, on the choice between resource availability and resource creation, on endogenous development or even, on productive territory/company encounters.

1.1. Resources and Territory

1.1.1. Mobility and (at the same time) Polarisation

Obviously, resources, in whatever form, can exist without being part of a particular territory, i.e. without being attached to that territory. Financial capital and know-how are resources, but they are fluid and apparently able to circulate today without being bound by distance.

In a globalisation which is synonymous with mobility, even the question having activities embedded in a territory could create a problem if at the same time we ignore the persistence, and perhaps even the growth of phenomena stemming from polarisation.

Paradoxically, we can observe a growing mobility occurring in a synchronised way amongst stakeholders and activities, and the endurance of a well established phenomenon: the rising concentration of wealth that has been produced in certain territories.

This paradox can be explained in different ways. It is also possible to place an emphasis on the different barriers to spatial homogenisation (the maintenance of protectionist policies by different States, the ‘resistance’ from national or local cultures, etc.) or even on the cumulative effects of processes involving spatial concentration. It is, for example, easier to invest in those territories where there is already a certain level of development in infrastructure than in those where nothing or next to nothing exists.

1.1.2. Resources and Territory: a dual-direction link

We however think that the main reason for the phenomenon of polarisation relates to the existence of resources that are linked or attached to particular territories. The existence of these resources and a fortiori, their value, cannot be analysed outside of the territorial context from which they came.

In Part 2 we will see that there is a good reason for making a distinction between two types of resources, one set considered to be ‘factorial’ and the other linked to processes that are, in the final analysis, specific and that can be presented in terms of coordination. At this stage we would like to describe the link between resources and territories by showing that the resources we are referring to only exist and have value when related to a particular territory. Conversely, a territory cannot exist without such resources. In other words, without its own resources, a territory cannot exist over time. It becomes a ‘place’ and therefore cannot become the object of economic development.
The link between resources and territories therefore operates as a dual-direction link.

1.1.3. A territory as a recipient of resources versus a territory as a space for the creation of new resources

The resources/territories dual-direction link can be configured in two different ways depending on whether or not it is existing resources that are under consideration or resources that are likely to be created.

In the first case we can consider that a territory ‘contains’ resources for which it is the recipient. These resources belong to the territory and it is possible to inventory them. A territory is deemed as being ‘rich’ or ‘developed’ when it possesses a significant number of resources that other territories do not possess. The cumulative- or auto-reinforcement effect can then explain why rich or developed territories continue to develop or become richer.

And yet, we can also observe that rich territories decline and that less developed territories succeed at surmounting their state of least development. From this we can conclude that processes exist whereby a territory, at any level of development, may become richer or poorer. A territory can create or destroy resources. We assert that these resources, whether created or destroyed, are coordination resources. They come about because of coordination between stakeholders or, by contrast, the inability or the refusal of the latter to coordinate themselves. The coordination between stakeholders creates new resources linked to the process of coordination itself. The inability or refusal to coordinate destroys existing resources. The territory, as perceived in a dynamic way, then becomes a positive-sum or a negative-sum game.

1.1.4. Territorial economic development policies

While the observation that mobility can encourage public policy to focus on the attractivity model for a territory, the polarisation model seems to suggest that we place the emphasis on the competitiveness of the territory. The structure and content of the information required for decision-making differ according to the two foci.

The mobility/attractivity perspective shifts the TIS towards the detection of mobile investments. Which company is likely to leave the territory or to be redeployed?

The polarisation/competitiveness perspective implies that an TIS is further oriented by the production of information aimed at the promotion and the accompaniment of the different configurations via which the stakeholders in a territory coordinate themselves - via all types of project, policies relating to ‘pôles de compétitivité’ (competitive clusters), policies in terms of fields of activity, etc.

1.2. Companies, resources and territory

1.2.1. Company needs and territory needs

The needs of companies in terms of resources do not imply that these resources have to be produced locally. Nothing prevents a company from mobilising resources that have been produced outside of a territory. However, the fact that a company is very much embedded in a particular territory would seem to indicate that the company has found specific resources in the territory that it will not need to look for elsewhere, at least in the short term.

In the same way that a company does not totally base its operations in a single territory (even when embedded) a territory cannot be grasped solely through its companies. On the one hand, it is not only companies that create value within a territory; on the other hand, there are ways of perceiving territorial dynamics other than through its stakeholders. Generating the creation of resources that are specific to or particular to the territory is one way to ensure the development of that territory. Of course, companies’ needs and resources and territories’ needs and resources are not
mutually exclusive and the notion of the “productive encounter” (Colletis, 2009) demonstrates its meaning here when the needs of one group are met by the resources of the other.

1.2.2. Productive company/territory encounters

If a cost reduction rationale dominates the configuration of the encounters (sustainable to a greater or lesser extent) between companies looking for an ‘optimum’ location and territories underpinned by a comparative costs approach, this rationale is not in the foreground of encounters between companies looking for skills to complement their own and territories basing their development on the premise that the dominant mode is the specification of their resources. The development (old and new) of externalisation practices is an organisational choice for a company’s ‘architecture’ and leads to considerable consequences, especially in a spatial sense. We can thus consider that the longest lasting territorial embedding will occur when there is a company looking for production flexibility in meeting unexpected problems that require renewed and original skills, and a territory characterised by a strong plasticity and favouring the redeployability of its resources.

It is probably when the instability of a company’s organisational architecture is at its strongest (and when the geometry of its limits changes the most - in the case of a ‘project-firm’) that the most lasting encounters - embedding - occur with territories that are themselves characterised by highly redeployable resources. Embedding is then a gamble for the future, an assumption of subsequent coordination in the resolution of problems that will undoubtedly present themselves, but the nature of which are currently impossible to anticipate.

1.2.3. An TIS guided by company/territory productive encounters

Three cases in point can be roughly identified when configuring the productive encounters between companies and territories. For each case the TIS can produce ad hoc information.

The first case is that of companies for which competitiveness is guided by costs. The TIS in this case can help the company to identify everything that contributes to the achievement of this objective: information on support grants or exemptions to which it is entitled, information on the price of certain network services (transport, energy, etc.) information on the price of land, information on the bidding conditions for government tenders. Of course, information on market prices (prices for competitive products, prices agreed to by suppliers, etc.), although supposedly freely available and without cost according to economic theory, will be more difficult to obtain.

The second case in point is that of the specialised company. This type of company will look for information pertaining to its sector of activity: who are its main competitors? their clients? their suppliers? Who are the potential technological partners (universities, technical centres, training centres)? What place does the territory hold in the activity of the various parties?

Finally, the third case is that of the company in search of production flexibility, as mentioned earlier. This type of company especially needs resources that are linked to a coordination process in the sense that its competitiveness depends less on cost control than on its ability to coordinate with stakeholders from different sectorial horizons (see 2.2).

The three cases that we have referred to here concern the company/territory relationship from the angle of the company and their need for a variety of resources.

A policy of territorial economic development can strive, simultaneously or
successively, to enhance existing resources, to favour the creation of new resources or to bring about lasting productive encounters. The TIS must therefore also provide the necessary information when defining public policies for territorial development and the implementation thereof.

As pointed out in the introduction, the structure of the information used to shape and implement policies can also drive them forward. This is especially the case for national statistics information systems and their nomenclatures (sectors, activities, territories, etc) (2007).

Part 2 proposes to represent territory resources according to two different typologies that match two ‘grand’ visions for the resources, but also two for the territory.

2. The different types of resources

The analysis of the texts that set out the territorial economic development policies, along with that from research produced on the regional economy, enable us to identify two key visions of the resources. The first vision considers resources as factors and most often presents them as existing in their own right, independent of their part in the process. The second vision considers resources to be linked to processes that are particular and that can ultimately be grasped in terms of coordination.

2.1. Factorial resources

A territory’s resources have been the object of observations that usually come within the framework of a ‘resource-endowed’ territory. The existence of the territory is therefore presumed; the territory is endowed with resources. Here the universe of reference is that of a static representation of the economy with a finite set of resources. This universe leads to policies that aim to attract available resources to the territory from outside, to optimise the allocation of existing resources and to manage the scarceness of certain resources, etc.

The so-called ‘classical’ analyses (Smith, 1776; Ricardo, 1821) use the notion of ‘factorial’ resources in this respect. In a similar way to a company, territories associate labour with capital, and of course we cannot forget land.

This analysis has been enriched and diversified using the three terms and today has led to the formation of a ‘doxa’28 which can be described as ‘standard’ (or dominant).

This doxa is the one that can be found in more or less the same form throughout the books as well as in the diagrams prepared by those who work in local development. It is mentioned widely in the texts from the Midi-Pyrenees Region, setting out the Region’s territorial economic development policy and in particular its SRDE29. The interviews that we held with regionally elected representatives responsible for economic development, members of Regional departments along with a variety of peripheral regional stakeholders who are involved in territorial economic development, confirmed the dominant position of this vision of resources.

2.1.1. Land

Land, after having almost disappeared as a resource and after having been assimilated into a particular form of capital, has reappeared as three items: a traditional mineral resource, an agricultural resource, including deposits of raw materials, and a provider for energy production (deposits and renewable energy).

2.1.2. Capital

Capital appears as a ‘classical’ factor of production (in particular machinery for companies), but also as a loan to pay for equipment and workers. In the latter case it is a financial capital that must not be

28 From the Greek δόξα: opinion. This relatively wide term covers notions of opinion, paradigmatic choice, social representation, even ideology.
29 Schéma Régional de Développement Économique (Regional Scheme for Economic Development)
confused with productive capital (the actual machinery of the company). We can add a third form of capital to productive capital and financial capital; this third type of capital, most often public capital, is tied up in infrastructures (transport, telecommunications, energy production, etc).

2.1.3. Labour
Labour constitutes the third and final factor. Labour, more often than not, is assimilated into workforce and is then specified as being either abundant or not, or available or not. More recently, the two worlds of research and training have been, by extension, associated with labour. A de facto difference is thus introduced to differentiate between simple and complex work, and between a person’s capacity to work and his capacity for creative work.

Whether we are referring to land, capital or labour with their varying meanings, an TIS must be in a position to produce the factorial information that is necessary for both the company and the territory. This especially means information which is quite descriptive (even if ‘structured’) presented in an ‘inventory’ style and capable of being organised, often in the form of a ‘guide’.

2.2. Resources linked to a process
While the factorial resources for the first doxa are in some ways immanent and existent in themselves, the second doxa considers that resources linked to a process do not exist outside of this process.

If the factorial resources are those that correspond to a vision of a presumed and resource-endowed territory, the resources linked to a process are those of an active territory, a territory that must be ‘revealed’ by virtue of the coordination that can occur amongst a number of stakeholders. So the universe we find ourselves in is one involving the development and creation of resources, the redeployability of resources, and hence the potentially infinite nature of the said resources, etc. The relevant policies will focus on establishing conditions that favour the creation of resources and on actions that identify and promote redeployable skills.

Here the emphasis is placed on the resources that on the one hand allow stakeholders to operate within a network and on the other hand, on resources that are produced as a consequence of this networking operation.

This vision of resources is by and large present in research texts, but it appears only occasionally in the interviews that were held with the Region’s stakeholders, and when it did appear, it was expressed in the form of a need for ‘new types’ of resources.

Two types of resource can be identified as resources linked to a process. The first includes a territory’s permanent resources, that is, those resources that will not disappear once the coordination has been completed. The second category covers resources that are specific to the coordination.

2.2.1. Permanent resources
A permanent resource is one that existed before the coordination and will survive after its completion. Two resource categories can be distinguished. The first is a territory’s cognitive heritage. This heritage includes the history of a territory and the events that have marked it. This history (account) is the one that is shared by all those stakeholders who see themselves as stakeholders within the territory, whether or not they have lived through the above events. The heritage also includes the memory that stakeholders have of previously successful examples of coordination. In fact stakeholders within a territory remember the coordinated activities that they have already been engaged in and these activities may act as a launchpad for subsequent cooperation.

The second resource category is one that can be described by the notion of ‘shared representation’. This shared representation can be broken down in three
identifiable ways. The first is the existence of a common language - the stakeholders within a territory share the same semantics for a set of key objects. The second is the feeling of belonging. Not only do the stakeholders within a territory give the same meaning to the terms they use, they also have the feeling of belonging to the same community (the sense of ‘us’). The third and final is trust; because they speak the same language and have a sense of belonging to the same community, the stakeholders within a territory have a mutual trust in each other. This trust can be considered both as an outcome and as a precondition (occasionally a condition) of subsequent cooperation.

2.2.2. Specific resources
A specific resource is very contextual; it is substantially linked to the coordination process. It concerns the skills that have been mobilised during this process and are of two orders: individual and collective.

The individual skills are those of the stakeholders, for example, in order to resolve a problem, a skilled stakeholder will seek out another nearby stakeholder who has complementary skills to his/her own in the resolution of the problem. The individual skills comprise the above stakeholders’ qualifications and their experience (active knowledge).

However, it is not enough that the exploitable individual skills for the resolution of a problem are available in order to ensure the achievement of both an effective coordination and a positive outcome.

We also have to add collective skills to individual skills; the former can be broken down into three (progressive) levels: communication skills (stakeholders succeed in communicating with each other, in exchanging information and data), coordination skills (for example, the stakeholders are aware of the modalities that will enable them to work together as a part of a project team), cooperation skills (beyond a one-off coordination, the stakeholders organise themselves in such a way that they can cooperate over the long term, that is, they can imagine further possibilities for coordination).

2.2.3. The role of an TIS
Identifying and passing on information about skills before facilitating their availability to a network are considered here to be the three key tasks of an TIS. It is important to note that having stakeholders within a network is seen as a distinctive feature of territorial intelligence (Moinet, 2008). Even though attracting skills comes under public policy, it also constitutes an objective (the quality of an TIS could be deemed as non-negligible factor in attractivity).

2.3. Two doxai that coexist
Factorial resources and process-linked resources correspond to two doxai which are different, but which can appear concomitantly within the same texts or the same practices. This is the situation for the Midi-Pyrenees Region, which although largely in line with the first doxa, here and there shows the need for a more dynamic vision of resources, though in a quite imprecise way. It is important to note that a similar situation exists with reference to how the territory is represented by two main doxai acting concomitantly. Moreover, (Salles & Colletis, 2008) have shown that these two visions of the territory lead to very different, if not conflicting, types of policy.

As far as we are concerned, the ontology for territorial economic development must therefore integrate the two doxai. Indeed, solely taking the first doxa (which is dominant in the Region’s texts and practices) into account within the ontology would lead - via the performative effect, as mentioned in the introduction - to policy decisions focusing mainly on existing resources to the detriment of resource creation.

The work involving the construction of the ontology as presented in the following
part, sets out to integrate the two visions of resources.

3. The construction of the ontology

In this section we will present simplified excerpts from that part of the ontology that has been given over to the notion of ‘resource’, following three stages in its construction.

3.1. Stage 1: Analysing the Region’s texts

The first stage involved analysing the Region’s texts as well as the interviews that we held with the Regional stakeholders responsible for territorial economic development.

This initial work provided us with a list of resources and very little classification of these resources. Intermediate classifications were added, some taken from the literature and some from ‘classical’ ontological construction work (Bachimont et al., 2002). A final look at economic literature helped us regroup the types of resource according to the three classical categories of land, capital and labour.

Figure 1 shows an excerpt which has been constructed from notions found within the texts and the interviews and completed with intermediate classifications. These notions are indicated by the first doxa (factorial resources).

3.1. Stage 2: Analysing the research texts

A second stage involving the analysis of territorial economic research texts (the ‘proximity’ school of thought) helped us to identify a second vision of resources. Figure 2 portrays the concepts taken from doxa 2 where doxa 2 considers resources as being linked to processes.

3.1. Stage 3: Integrating the two doxai

A third stage was devoted to the integration of the two doxai within the final ontology. In this particular case, the integration did not pose any specific problems because the two doxai do not entail any overlap.

We will describe an ontology that integrates several doxai as a polydoxical ontology. When taking into account the exploratory nature of the project, as well as the fact it was designed to be used over the short term, the final ontology is a light ontology, formalising concepts that are linked by subsumption relationships (Is-A), marginally, by meronymy (Is-A-Part-Of) and by a number of ad hoc relationships.
Figure 3 shows the first levels of the ‘resources’ part taken from the final ontology. The lower levels remain unchanged in relation to figures 1 and 2.

![Diagram of the ontology](image)

Figure 3 Excerpt from the final ontology integrating doxai 1 and 2

We need to remember that as we have chosen to represent the resources linked concepts in the form of an ontology, the work undertaken could be relatively easily adapted for another type of information structure.

**Conclusion**

In this paper we have set out a study, undertaken within the framework of a project financed by the Midi-Pyrenees Region, that represents a territory’s resources. The first part demonstrated the vital role of resources when choosing territorial economic development policies. As these choices were restricted by the structure of information, and in particular, the available categories, it was incumbent upon us to examine what a typology of resources could be. The work led us to identify two separate visions (doxai) of resources, each expressed in a different, but complementary typology. These two doxai coexist with the relevant stakeholders involved in the field of territorial economic development, either within the Region or in economic research. The choice was made to respect the simultaneous existence of these two doxai and to integrate them both into the same ontology.

The representation of the territory’s resources so constructed is intended to be integrated into a general ontology for territorial economic development. A first version of this ontology was created within the context of the CAVALA project (with the aim of defining indicators to evaluate economic policies), but considerable work remains to be completed. The clarification of the different doxai at stake, those that are often the most tacit in the texts and singing practices, could prove to be an effective tool in encouraging consistency and effectiveness within policies (Salles, 2007).

**References**


Evaluating Business Intelligence Software -
Testing the SSAV Model

Yasmina Amara *, Klaus Solberg Søilen*, Per Jenster and Dirk Vriens†

*Department of Management
Blekinge Institute of Technology
Sweden
kss@bth.se

China Europe International Business School
Shanghai, China
pjenster@ceibs.edu

† Nijmegen School of Management, Netherlands
D.Vriens@fm.ru.nl

Abstract
Choosing the right Business Intelligence (BI) software is critical to increasing productivity and effectiveness in organizations today. At the same time, it is a very elaborating and complex process to choose the right software due to the fact that a large number of BI products exist on the market, which are quite different and updated frequently. The objective of this study is to develop and test a model for the evaluation of BI Software. The findings of the study revealed that it is difficult to declare what is the most competitive BI software as what is good for one user might not be good for another depending on their different business needs. Having said that the study initiated a new classification of BI Software vendors depending on the degree to which they comply with the functions in the Competitive Intelligence (CI) cycle. The software tested was divided into five categories: Fully complete, Complete, Semi Complete, Incomplete and Insubstantial. We conclude that the SSAV (Solberg Søilen, Amara, Vriens) Model Together with some proposed non technological variables and a classification developed can be used as a user's selection tool for deciding which BI Software to purchase.

Keywords: Business Intelligence, Software evaluation, Competitive Intelligence, SSAV model

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This is a summary of a study by the same title.
1 Introduction

With the emergent volume of data handled by companies in our fast changing business environment, staying competitive means constantly analyzing the existing market for relevant changes. This puts a burden on business owners, continuously to find and interpret information that is imperative for their survival. According to Gartner Group (2007) "The amount of data collected by an organization doubles every year. Knowledge workers analyze only 5% of this data. Knowledge workers spend 60% of their time searching for important relationships in the data, 20% analyzing the discovered relationships, and only 10% on doing something with the analysis (i.e., making decisions, implementing strategies and plans, etc.). Information overload reduces decision-making capability by 50%". There is an increasing demand for software that can assist in this process, what is broadly known as Business Intelligence (BI) software (Solberg Søilen, K. 2005).

2 Problem formulation

The purpose of this research was to generate a new model with a new set of criterion for evaluating BI software. The idea was to propose an assortment of evaluation variables for each function of the CI cycle. So far the BI term has been used by a too large variety of software solutions. Moreover, the research aimed at testing the model upon a chosen sample of BI software vendors to determine the most complete BI Software. The aim was also to determine the software’s most important values, which ought to be considered by companies when deploying BI applications. The new BI Software evaluation criteria and vendors categories aim to differentiate various vendors in the market and hence initiating a more informed user selection discussion.

The research will attempt to answer the following questions:

- What discussed variables/criteria are selected for evaluating Business Intelligence BI software?
- How are these BI software variables measured?
- According to the criterion selected what are the most competitive BI Software available among the few that have been selected?
- What credible categorization can be used to classify BI Software vendors?
- What is the potential for the proposed variables/criteria and vendor's categories?

2.1 A short background to the problem

Business survival today is based on companies’ abilities to analyze their rivals’ moves, and to anticipate market developments rather than simply react to them (Millre, S. 2001). CI enables senior managers in companies of all sizes to make informed decisions about everything from marketing, R&D, and investing tactics to long-term business strategies. Moreover, CI is considered a value-added concept that outperforms the top of business development, market research and strategic planning (Arik, J. 2005).

Authors mostly refer to two reasons for obtaining a competitive intelligence capability. Firstly, CI contributes to the overall organizational goals such as improving its competitiveness or maintaining the viability of the organization. In addition it contributes to the organizational activities needed to reach the overall goal like decision-making or strategy formulation (Vriens, D. 2003). Hence as claimed by Jan P. Herring (1993) the roles of CI efforts fall into the following categories:

- Strategic decisions and actions (tactics)
- Early-warning topics that prevent surprises to the organization relating to product launches, new emerging, or changing market and new technologies or business methods
- Knowledge of, learning from and assessments of key players and competitors, and
- Intelligence assessments for planning and strategy development.

Therefore, with CI capabilities a business can predict the action of their competitors & key players, remain competitive in the market and reach its goals through better decisions and more focused strategy planning.

2.2 Business Intelligence (BI) software

More and more intelligence tasks today are automated, by the use of Business Intelligence. Effective competitive intelligence results not from luck, but from the same careful planning, discipline, and systematic process that scientists employ. "However, the companies with the highest success rates at winning new business have found that competitive intelligence is not a magical art; it is a science whose ethical
practice readily impacts a company’s top and bottom lines" (O’Quinn, O. 2001). According to Vriens (2003) in order for the intelligence cycle to be carried out properly, an organization should implement a balanced mix and an intelligence infrastructure that consists of following three parts:

- A technological part, comprising the ICT applications and ICT infrastructure that can be used to support the intelligence cycle phases
- A structural part, referring to the definition and allocation of CI tasks and responsibilities (e.g., should CI activities be centralized or decentralized), and
- A human resources part, which has to do with selecting, training and motivating personnel that should perform the intelligence activities.

Thus, although technology matters for building effective CI it should be combined with good planning for the allocation of the CI tasks, making sure CI activities are carried out by professionals and get others involved. Human resource departments should plan the selection of CI staff cautiously to ensure a superior CI performance.

All along different Information & Communication Technologies (ICT) tools are used for supporting the different activities in the competitive intelligence cycle. ICT for CI (or Competitive Intelligence Systems, CIS) is best seen as a collection of electronic tools (Vriens, D. 2003) that support strategic decision-making, that are dispersed over different management levels; and that supports structured and unstructured intelligence activities.

According to Vriens three types of ICT tools can support or sometimes even replace the CI activities: the internet as a tool for direction or collection activities, general applications to be used in CI activities (groupware or intranets etc) and Business Intelligence software. This paper is concerned with the latter.

3 Method

Empirical research was carried out to test the developed model. A selected sample of BI Software vendors and their products was tested against the set of evaluation criteria originated from the conceptual work. Initially a custom-made cover letter requesting free access to the sample vendor's products for measuring purposes was sent out. The vendor's sample which has been integrated in the evaluation is a non-probability purposeful quota sample that includes 11 BI Software products: Business Objects, Microstrategy, Microsoft, Information Builders, Panorama, QlickView, Spotfire, Cognos, SAS, Astragy and Digimind. Observations and experiments were conducted using mostly the free software accesses obtained from the software trial demonstrations already available and the vendors' presentations & white papers to collect data regarding the capabilities. The evaluation model developed with its variables and proposed measuring scale (Likert Scale) were documented and mapped as a checklist and used to evaluate the BI software samples and demeanor quantitative analysis of numerical data obtained from the Likert scale scores enabling the comparative investigation of the BI vendors who are participants in the study.

The research will attempt to answer the following questions:

1) What discussed variables/criteria are selected for evaluating Business Intelligence BI software?
2) How are these BI software variables measured?
3) According to the criterion selected what are the most competitive BI Software available among those few that have been selected?
4) What credible categorization can be used to classify BI Software vendors?
5) What is the potential that the proposed variables/criteria and vendor's categories can be used as BI Software users' selection foundation?

For business intelligence systems to be successful, there is need to create an appropriate infrastructure to capture and create data, information, and knowledge, and store them, improve them, clarify them, analyze them and disseminate them to decision makers so that there can be an overall understanding of a company's operations for actionable results (Thierauf, R. 2001).

Thus for ensuring effective business intelligence platform, five essential steps are needed: Understanding the problem, collecting the data, analyzing the data, sharing the results, and acting on the information which represents the phases of the CI cycle all of which are
supported with different technologies (capabilities) whether data warehousing, business analytics, Analytical models (user's interfacing) Business Performance Management (BPM), user's interfacing as explained by Ericsson (2004):

Figure 1: BI SOFTWARE CAPABILITIES (Ericsson, 2004)

The priorities of the business are understood here by mapping the existing data flows and structures and understanding the needs of the decision makers (Ericsson, 2004). This BI function basically supports the planning phase in CI cycle.

3.1 Software Evaluation

"Business organizations are still struggling to improve the quality of Information Systems (IS) after many research efforts and years of accumulated experience in delivering them" (Duggan, E. 2006). Building an information system, whether it is a customized product for proprietary use or generalized commercial package, means providing sophisticated high-quality software, with the requisite features that are useable by clients, delivered at the budgeted cost, and produced on time. However, these goals are not frequently met; "Hence, the recurring theme of the past several years has been that the Information System community has failed to exploit IT innovations and advances to consistently produce high-quality business applications" (Brynjolfsson, 1993; Gibbs, 1994). The evaluation of software and its business value are recently the subject of many academic and business discussions. Since Investments in IT are growing extensively, and business managers worry about the fact that the benefits of IT investments might not be as high as expected (Van Grembergen, 2001). The business value of a software product results from its quality as perceived by both acquirers and end users. Therefore, quality is increasingly seen as a critical attribute of software, since its absence results in financial loss as well as dissatisfied users, and may even endanger lives (Duggan, E. 2006). Thus users’ perception of software quality is the base of evaluating software.

Palvia (2001) interpreted information system quality as discernible features and characteristics of a system that contribute to the delivery of expected benefits and the satisfaction of perceived needs. Other scholars, such as Ericsson and McFadden (1993), Grady (1993), Hanna (1995), Hough (1993), Lyytinen (1988), Markus and Keil (1994), Newman and Robey (1992), have further explicated IS quality requisites that include:

- Timely delivery and relevance beyond deployment
- Overall system and business benefits that outstrip life-cycle costs
- The provision of required functionality and features
- Ease of access and use of delivered features
- The reliability of features and high probability of correct and consistent response
- Acceptable response times
- Maintainability which means easily identifiable sources of defects that is correctable with normal effort
- Scalability to incorporate unforeseen functionality and accommodate growth in user base, and
- Usage of the system.

Besides Quality, Bass (1998) uses the following attributes to evaluate software:
- Performance: The responsiveness of the software
- Reliability: The ability of the software to keep operating
- Availability: The proportion of time the system is up and running
- Security: The measure of the software ability to resist unauthorized attempts at usage and denial of service while providing the service to the user
- Portability: Is the ability to make changes to software quickly and cost effectively
- Functionality: The ability of the software to do the work for which it was intended
- Variability: How well the software can be expanded or modified
- Conceptual Integrity: The underlying theme or vision that unifies the design of the software at all levels, and
- Usability: The user's ability to utilize software effectively.

Furthermore, Fenton & Pfleeger (1997) introduced a quality model which evaluates software based on the following three dimensions.

- The People dimension: This dimension includes the competent IS specialists along with their skills and experience necessary to manage both the technical and behavioural elements of the software. Whereas delivery is central to ensuring high-quality IS products (Perry et al., 1994).

- The Process dimension: This dimension prescribes the timing of each deliverable, procedures and practices to be followed, tools and techniques that are supported, and identifies roles, role players, and their responsibilities (Riemenschneider et al., 2002).

- The Product dimension: The product quality is concerned with inherent properties of the delivered system that users and maintenance personnel experience (Duggan, E. 2006).

Additionally, it is said that the user-centred perception of the software delivery increase the opportunity of producing higher quality systems (Duggan, E. 2006).

- The Process dimension: This dimension prescribes the timing of each deliverable, procedures and practices to be followed, tools and techniques that are supported, and identifies roles, role players, and their responsibilities (Riemenschneider et al., 2002).

Its target is process consistency and repeatability as IS projects advance through the systems life cycle (Duggan, E. 2006).

- The Product dimension: The product quality is concerned with inherent properties of the delivered system that users and maintenance personnel experience (Duggan, E. 2006).

The noticeable growth in the BI Software market is leaving companies of different spheres in bewildering status by having to decide amongst diverse BI software vendors that want to assist them to achieve their business objectives.

According to CBR staff writer (2007) "the scope for differentiation between BI vendors has shifted higher up the stack, towards issues such as predictive analytics and real-time BI. It has also moved lower down the stack, towards more pervasive BI and client BI applications. Other differentiation strategies may focus on strategic issues such as ease of deployment, on-demand offerings, industry-specific packages, enterprise application integration or go-to-market approaches". For this reason, choosing the right BI software is critical to increase productivity and effectiveness in the organization. Nevertheless it is a very elaborating and complex process due to the fact that numerous BI software packages exist on the market most of which are updated very rapidly.

Most importantly the selection process involves various criteria and variables against which BI software are compared and evaluated which on the whole are not apparent and generally vague (Turban et al., 2007). Besides, most of the evaluations done are not able to combine both the testing of the BI effectiveness as a tool and its support of the phases in the Competitive Intelligence CI Cycle. So far only Gartner, Forrester and Fuld & Company are established for performing evaluations of BI software. The attributes that are used here to evaluate software can't be used directly for evaluating BI Software. Hence the need to find specific attribute to evaluate BI Software quality.

### 3.2 Gartner

Gartner Inc. is accredited for having introduced the term “business intelligence”. Gartner initiated the Magic Quadrant for Business Intelligence Platforms evaluation which states that users should evaluate vendors in all four quadrants, including the Niche Players, Visionaries, Leaders and Challengers. According to Gartner research 2005 the
vendors are placed in one of four positions (leaders, challengers, visionaries and niche players) in a “magic quadrant.” As follows:

- **Leaders:** have strong market position, solid customer support, and an extensive pool of skilled developers. Their products have generic functionality. Also, there is limited or no access to key personnel, and there is little room to negotiate prices.
- **Challengers:** are characterized by their stability, solid customer support, reliable technology, and functional completeness. Their products' architecture may be outdated, they have a limited pool of skills, and they may compete with potential application partners.
- **Visionaries:** have cutting-edge functionality in their offerings and have the potential for aggressive discounting. On the flip side, they are potentially unstable, offer limited support, and have an extremely meagre skills pool.
- **Niche players:** typically have critical and unique functionality—but they have a limited ability to compete in the market and enhance their product. Of course, not all of these characteristics apply to each and every one of the vendors, but they serve as a framework to categorize them for comparison purposes.

Vendors were included in the Magic Quadrant if they met the following requirements:

- They deliver at least eight of the (12) BI platform capabilities divided into three functionality categories integration, information delivery and analysis.
- They have a reasonable market presence, which we define as greater than $20 million in annual revenue from BI platform software.
- They demonstrate that their solutions are used and supported across the enterprise, and go beyond departmental deployments. (Gartner 2007).

Later on the vendors who can be added to Gartner's magic quadrant are evaluated based on two evaluation criterions. The first is based on vendor's ability and success in making their vision a market reality and the second on their understanding of how market forces can be exploited to create value for customers and opportunity for themselves.

To conclude, Gartner's evaluates BI Software from the pure business perspective. It assesses BI software ability to achieve its business goals and vision. Although it looks at BI software functions to determine the intrusion condition of any BI software in the Gartner's evaluation, it doesn't measure the BI functions effectiveness nor the software support of the CI cycle phases.

### 3.3 Forrester Wave BI

Forrester Wave BI Software evaluation includes a detailed in depth evaluations criteria based on three level buckets: Offering, Strategy, and Market Presence (Keith, G. 2006). Forrester wave evaluates BI vendors who met the following criteria:

- A vendor with annual estimated BI revenue in excess of $100 million
- A vendor with or more products specifically targeted at the BI reporting and analysis market, and
- A market-leading pure-play BI vendor, RDBMS, or enterprise application vendor with a native analytic or enterprise reporting product/component, or a supporting reporting engine and repository.

Forrester found through users interviews that most users are unsatisfied with the way they currently receive analytic information. Thirty percent of those surveyed thought their analytic software has significant gaps in usability. Twenty-two percent cited lack of detail as an issue. Forrester assesses the BI vendors on their functions effectiveness and usability but in a very general manner without going into any depth of each BI capability. Moreover, it didn't evaluate the level of support BI software functions provide to the CI cycle phases.

### 3.4 Fuld & Company CI Software evaluation

Fuld & Company compare CI users’ reactions of CI software to those of animals with certain traits in order to motivate hundreds of users to respond and complete a survey that is aimed to convey both the characteristics of the technology
and their responses to that technology. The animals they chose were as follows:

- **Slug** because of its lack of speed and responsiveness
- **Gerbil** a fast animal but one that seems to go in circles, quickly spinning its wheels, but going nowhere
- **Bee** for its speed, smarts, and sense of the bigger picture
- **Parrot** that would spit back the information, adding little, and
- **Labrador** a dog who would go and retrieve what you need when you need it.

"The largest single segment of respondents, 42%, compared their competitive intelligence CI technology to a bee- an insect that “creates a useful pattern or swarm of information and helps me connect the dots.” Nearly one-third (29%) saw their solution more like a Labrador retriever, “good at fetching and retrieving.”

A vocal minority of nearly 30% of respondents gave the software low grades, comparing it to a parrot (11% - “just spits back what you sent to it; no added value”), a slug (12% - “just takes up space and never seems to go anywhere”), or a gerbil (6% - “lots of action, spins its wheels and offers no substance whatsoever – and definitely consumes my time”) (Fuld & Company, 1999).

Fuld & Company evaluates the software packages with regard to the five steps of the Intelligence Cycle in relation to how much we can reasonably expect the technology to support each step of the CI Cycle. They first had to distinguish between packages that promoted themselves as Business Intelligence tools.

"Business Intelligence software", as the industry labels many of its products, typically deals with data warehouses and quantitative analysis, almost exclusively of a company’s internal data (e.g. CRM, Customer Relationship Management data) (Fuld & Company intelligence report, 2006-2007).

Fuld (2002, page 12-13) state that the fulfillment of the following functions acts as criteria in judging CI applications in the direction phase:

- Providing a framework to input Key Intelligence Topics and Key Intelligence Questions, and
- Receiving CI requests managing a CI work process and project flow that allows collaboration among members of the CI team as well as with the rest of the company.

For the data collection phase the criteria includes the following:

- The ability to capture qualitative, ‘soft’ information from employees throughout the company, either through internal message boards, e-mail, or another easily accessible medium by which primary information can be inputted and retrieved
- The capacity to target and retrieve qualitative information (such as consumer feedback) from message boards, news groups, and other external forums, and
- An area in the software and user interface for inputting interviews, field reports, and other first-hand accounts.

The criteria for the analysis phase include:

- The ability to sort information by user-defined rules
- Data visualization interface(s) to sort and view collected information
- Multiple viewing models, such as SWOT (Strength Weaknesses Opportunities Threats) and Porter’s Five Forces model
- Display of information in chronological order
- Extraction of relationships between people, places, dates, events, and other potential correlations
- Text-mining technology to locate and extract user-defined variables, and
- The ability to relate analyses to quantitative data.

For the reporting and informing phase:

- Both standardized and customizable report templates
- The ability to link and export reports to Microsoft Office formats, CorelDraw, PDF, multimedia formats, other databases, and/or other reporting systems, and
- The capability to deliver reports via hard copy, the corporate intranet, e-mail, and/or wireless sources.

Fuld’s evaluation criteria evaluated software packages with regard to the backup it provides for the four CI Cycle phases. The software packages that have participated in the Fuld's evaluation were
the one not dealing with BI functions from: Frameworks, Data Warehousing, Business analytics and User's interface but rather those with more simple functions assigned for planning, data collection, and analysis and information delivery methods.

Fuld's criteria didn't measure the effectiveness & efficiency of the software as a tool. Hence, this study used and set off further from Fuld's Model criteria by applying the developed Model on Software packages escorts BI functions.

4 Results and Analysis

The SSAV BI Software evaluation Model was developed and tested on a sample of BI Software discussed earlier by analyzing their various capabilities (Functions). Its aim is to evaluate BI Software effectiveness & efficiency as a tool in addition to assess how each BI function supports a particular CI activity in the cycle. Moreover, the variables used for evaluating BI Software can be divided into the following three classes:

- **PROCESS VARIABLES I**: They include variables for evaluating the effectiveness & efficiency (quality) of BI Software functions (Capabilities).
- **PRODUCT VARIABLES**: They include variables for evaluating the effectiveness & efficiency (quality) of artifacts, deliverables or documents that result from BI Software function, and
- **PROCESS VARIABLES II**: They include variables for evaluating how a BI function supports a particular CI cycle activity.

Consequently, the variables used in the evaluation criterion were divided into four parts as illustrated.

A five point Likert scale was used to evaluate the BI Software functions against the developed evaluation criteria by selecting a number from highest to lowest (0-4) for each specified trait/variable. The numbers are arranged horizontally and are added up to arrive at an overall score as follows:

- 4 = EXCELLENT,
- 3 = GOOD,
- 2 = SATISFACTORY,
- 1 = POOR,
- 0 = (N/A)

Seeing that, selecting the right BI software is critical to improve the productivity and effectiveness of organizations huge burdens are put into developing a suitable methodology that can be used for selecting BI software that will best suit the users' needs.

In this paper the focus is to develop a new technological Model for evaluating BI software effectiveness & efficiency as a tool besides assessing the extent in which they support the four phases of the CI cycle. Consequently, these technological variables can be used as a starting point when selecting a BI tool.

Although, the technological variables can aid users in narrowing down their BI vendors alternatives, they are not enough. Further, investigation should be conducted to extract some non-technological variables which could be critical to enhance users end decision regarding which BI tool to pursue.

Three additional non-technological variable groupings can be used as a BI evaluation criterion and hence as a selection tool as demonstrated below.

- **Human & Structural Variables**: It includes variables relating to the effectiveness of the development teams and the allocation of CI tasks and responsibilities among them. Moreover it has to do with the human competencies that should be available when selecting, training and motivating personnel that should perform the intelligence activities. The proposed human & structural variables are illustrated in the table (4) below:
- **Users Variables**: They include variables concerning the In-House staff using the software. As shown in table (5) below.
- **Vendors Variables**: Usually the final choice regarding the BI tool selection is often based on the ability of the chosen vendor to support the company’s current and future projects in terms of stability, resources, and experience.

Consequently, to aid users in their BI tool selection it is recommended to evaluate the software upon the technological and non-technological variables mentioned in this
chapter using the Likert scale. However, in this study only the technological variables are used in the SSAV Model to test some BI vendors' software for two reasons, time constraints and the difficulty to assess the non-technological variables using the projected methodology. Using BI Vendors free trials, demos, presentations and white papers collected, performance assessment along with comparative analysis were conducted for each vendor software participating in testing the SSAV Model; resulting in a pertinent score on the Likert scale for each variable in the different BI Functions & CI phases of the Model for each vendor. In addition to an overall score for each BI function, support of CI Cycle phase and the total phase score were calculated correspondingly for each BI participant.

4.1 The most competitive BI Software
Saying that a particular BI Software vendor is the most competitive is not possible. It is possible to say that a certain BI vendor concentrates and stands out in one phase or more in the CI cycle while disregarding the rest. Moreover, a software vendor can do better in a certain BI function compared to the others functions.

So, it is of great importance for users to determine what intelligence cycle feature or BI software function is essential to work properly. And decide which software to purchase. On the other hand it is important to be able to spot the complete (standard) BI vendors which offer the four CI cycle phases in one package and identify those who have the highest overall score in the CI phases together. Below are the findings resulted from analyzing the Likert scale scores for the limited number of BI Software vendors who participated in this study.

4.2 The top data collection vendors
According to the scale below Information Builders is the best BI vendor when it comes to data collection followed by Cognos and Business Objects. Alternatively TIBCO Spotfire is the least good.

<table>
<thead>
<tr>
<th>RANKING</th>
<th>BI SOFTWARE VENDOR</th>
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<tbody>
<tr>
<td>1</td>
<td>INFORMATION BUILDERS</td>
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<td>2</td>
<td>COGNOS</td>
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<td>3</td>
<td>BUSINESS OBJECTS</td>
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<td>4</td>
<td>MICROSTRATEGY</td>
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<tr>
<td>5</td>
<td>COGNOS</td>
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<td>6</td>
<td>TIBCO SPOTFIRE</td>
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<td>7</td>
<td>PANORAMA</td>
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<td>8</td>
<td>ASTRAGY</td>
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<td>DIGIMIND</td>
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<tr>
<td>10</td>
<td>INFORMATION BUILDERS</td>
</tr>
<tr>
<td>11</td>
<td>QLICKVIEW</td>
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</tbody>
</table>

Source: Evaluation Results

As for the two CI software vendors Digimind and Astragy they come at last since they don't provide any BI functions which here contribute to the data collection overall score. Both vendors score high in supporting the CI data collection variable but using different means and functions.

4.3 The top vendors in analysis
From the next figure we see that SAS is the best in analysis followed by Microsoft and Business Objects. And the vendor who is less good in analysis is QlickView. While the rest vendors analytical capabilities are somehow below average. Again although Digimind & Astragy provide good analysis their score are low on the scale since they don't provide any BI business analytics from OLAP, data mining, predictive or qualitative analysis.

<table>
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<th>RANKING</th>
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<tr>
<td>1</td>
<td>SAS</td>
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<td>2</td>
<td>MICROSOFT</td>
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<tr>
<td>3</td>
<td>BUSINESS OBJECTS</td>
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<td>10</td>
<td>INFORMATION BUILDERS</td>
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<td>11</td>
<td>QLICKVIEW</td>
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Source: Evaluation Results

TABLE 1: BI SOFTWARE RANKING IN DATA COLLECTION

TABLE 2: BI SOFTWARE RANKING IN ANALYSIS,
When it comes to the ability of Dissemination the list is as follows:

<table>
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<td>DIGIMIND</td>
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<tr>
<td>11.</td>
<td>ASTRAZY</td>
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</table>

Source: Evaluation Results

The top dissemination vendors are Business Objects, providing the best information delivery, followed by Cognos and Panorama. Microstrategy is at the bottom of the list. As for Astragy and Digimind they have low scores for the same reason mentioned above though their score for supporting the CI dissemination phase is almost the same as for other BI vendors.

4.4 The top vendors in planning & directing

Astragy is the only vendor who supports this phase of the CI cycle as its consultanists helps and advises users with the organization of their intelligence system. No list is therefore added here.

The most complete (standard) vendors are Business Objects, with the highest overall score making it the most complete vendor followed by Cognos, Microsoft and Information Builders. QlickView has the lowest overall score.

If the total score was calculated by adding up only the CI phases supporting variables without the BI functions variables Digimind would have scored highest followed by Business Objects. From the empirical findings and their analysis a new categorization for BI software can be generated. This categorization segregate BI Software into five categories depending on the level of support it provides for the CI cycle phases as follows.

- Fully complete: BI Software in this category excels in the four phases of the CI Cycle including: planning, data collection, analysis and dissemination.
- Complete: Since the planning & directing phase is seldom supported by any BI software, they can be considered complete but not fully complete if it performed very well in the other three phase of the CI cycle: Data collection, analysis and dissemination.
- Semi complete: In the case the BI Software excels in two CI phases out of four it is considered to join this category For example: Data collection & Analysis, Data collection & Dissemination or Analysis & Dissemination.
- Incomplete: When the BI Software stands out in only one phase of the CI cycle it is positioned as incomplete. For example: merely data collection, solely analysis or just dissemination.
- Insubstantial: If the BI Software perform well in any of the CI cycle phases it is included in this category.

In order to consider a BI software excelling in a phase it ought to have an overall score of (2.5) or more in that particular phase on the Likert scale. Consequently, the sample BI software evaluated can be classified using this categorization, as shown in the following table:

<table>
<thead>
<tr>
<th>BI SOFTWARE</th>
<th>CATEGORY</th>
<th>PHASES IT EXCELS IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Builders</td>
<td>Semi Complete</td>
<td>Data Collection &amp; Dissemination</td>
</tr>
<tr>
<td>Microstrategy</td>
<td>Incomplete</td>
<td>Dissemination</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Semi Complete</td>
<td>Data Collection &amp; Analysis</td>
</tr>
<tr>
<td>Business Objects</td>
<td>Complete</td>
<td>Data Collection, analysis &amp; Dissemination</td>
</tr>
<tr>
<td>Panorama</td>
<td>Semi Complete</td>
<td>Data Collection &amp; Dissemination</td>
</tr>
<tr>
<td>Cognos</td>
<td>Semi Complete</td>
<td>Data Collection &amp; Dissemination</td>
</tr>
<tr>
<td>Spotfire</td>
<td>Incomplete</td>
<td>Dissemination</td>
</tr>
<tr>
<td>QlickView</td>
<td>Insubstantial</td>
<td>None</td>
</tr>
<tr>
<td>SAS</td>
<td>Semi Complete</td>
<td>Data Collection &amp; Analysis</td>
</tr>
</tbody>
</table>

Source: Evaluation Results

The proposed categorization can be used as a foundation when selecting BI Software by enabling users to clearly see what CI phases are critical for serving their business needs.
5 Conclusions

The purpose of this paper was to develop a model (The SSAV Model) with a scale and test it on a small sample of BI vendors. Moreover the aim was to decide upon which BI Software is the most competitive, classify them using a credible categorization and examine the models' and the categorizations' potential to be user's selection foundation.

By reviewing the theoretical framework comprehensively, the SSAV model with its evaluation criteria for assessing BI Software using a five point (0-4) Likert scale is developed. It consists of technological variables covering the BI functions and CI cycle phases which is capable of evaluating the BI tool effectiveness & efficiency as well as assessing its level of support for the CI cycle phases. Thus, being able to build up a model that benefits and add from previous evaluations' models as Gartner, Fulds and Forrester Wave.

The assertion that a particular BI Software vendor is the most competitive is difficult. A Business Intelligence vendor might excel in one phase or more in the CI cycle and/or stand out in a certain BI function while disregarding the rest. Accordingly, it is of great importance to determine what intelligence cycle feature or BI software function is crucial to work properly for them users when pursuing BI software.

As of the analysis of the empirical findings for our limited number of BI software participants we found that Information Builders is number one in data collection, SAS is the best in analysis and business objects is the leader in dissemination. The most complete BI tool are Cognos and Astryag, the only vendor in our sample who supports the planning & directing phase of the CI Cycle. Additionally, Information Builders are the top in providing data warehouses and data integration; Business Objects excels in metadata reports, qualitative analysis, user interfaces and reports.

The best OLAP is from Microstrategy and Data Mining & predictive analysis from SAS. Whereas Cognos stands out in the user interfaces & in reporting.

It is crucial to point out that Astryag & Digimind BI Software don't include any kind of frameworks, Data warehousing, Business Analytics or user interfaces capabilities or any other BI Software functions being evaluated in the SSAV Model. Their more ordinary common functions for supporting the CI cycle phases results in a low score on the overall CI cycle phase score, even though they could be achieving an outstanding performance in that particular phase. Hence, further adjustment ought to be started in order to develop a model that will be able to give these kinds of BI Software a more reliable evaluation. Generally speaking the planning & direction phase of the CI Cycle is not commonly available in any BI Software being evaluated. Therefore more attention should be given to the development of frameworks that support this phase since it is fundamental for determining the strategic information requirement and it is considered the base for the other phases in the CI Cycle.

Nevertheless, the analysis of the empirical shows that on average BI vendors perform good in the dissemination and data collection phases but still most of them lack the analytics capabilities where more emphasize should be placed.

Lastly, BI Software vendors nowadays can be classified into five categories: Fully Complete, Complete, Semi Complete, Incomplete and Insubstantial depending on the level of support it provides for the CI cycle phases. Hence, it can be a further help for users' selection of the BI Software vendor that best meets it business needs by helping users select from these five categories the
BI Software that will aid them in achieving their long & short term objectives.

Business Objects is the only complete BI vendor among the vendors being evaluated. Information Builders, Microsoft, Panorama, Cognos and SAS belong to the semi complete category. Whilst, Microstrategy and Spotfire are considered Incomplete and QlickView Insubstantial.

Accordingly, the technological variables of the SSAV Model, the proposed non technological variables and the categorization developed can together be used as users' BI Software selection tool.

6 Suggestions for further study

During the theoretical and empirical study, many questions, which deserve further investigation, have come up. These questions can be answered through some future studies. So the followings future studies can be suggested subsequently.

One of the findings of this study was that the SSAV Model of technological criterion in conjunction with the proposed non-technological variables consisting of Human, users and vendors factors are to be used to evaluate BI Software. Consequently, the first suggestion for future studies is to test these non technological variables on the BI Software.

This couldn't been done during this study due to the time limitations as it was difficult to observe development teams in their natural working environments nor conduct personal interviews with end users and BI vendors.

Additionally, free software accesses, free trial demonstrations, vendor presentations and white papers were used to compare BI Software and grant each a score on the Likert scale depending on the variable being evaluated which good to some extent. But, in order to get more accurate measuring results an alternative way could be implemented which were constricted along with the time factors.

The alternative measuring method can include using the same data source (Data set) for all the participant BI vendors and thus tracking what occurs to this data source throughout the whole CI cycle phases for each vendor separately and can be considered as a further suggestion for advanced studies.

Besides, again due to the time constraints and not being able to get free trials from all the credible BI vendors the SSAV Model was tested only on 11 BI vendor. So, in order to make a more comprehensive reliable evaluation it is vital to include the rest in another study. At least it can include: Proclarity, Terdata, Pilot, prelytis, Epicor, Codec, SAP and ComArch.

Finally, the SSAV Model couldn't be totally applied on Astragy and Digimind BI Software since they don't contain the usual BI functions like Frameworks, data warehousing, business analytics and user interface but rather other functions that support the CI Cycle phases. Accordingly, Building a new version of this evaluation model to support these kind of BI software could be an interesting topic for further studies.

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How application integration, security issues and pricing strategies in business intelligence shape vendor differentiation

Klaus Solberg Søilen*, Anders Hasslinger**

*Department of Management
Blekinge Institute of Technology
Sweden
kss@bth.se

**Department of Economics
Kristianstad University College
Sweden
hasslinger@gmx.at

Abstract
This paper is investigating, through a mixed-method research combining interviews and an online survey, how BI vendors differentiate themselves when it comes to application integration, security issues and pricing strategies. The conclusion is that BI vendors differentiated themselves mainly by having individual definitions of what BI is. Buyers should therefore compare vendors through the vendor’s definition of Business Intelligence. Security issues were mainly user centric and pricing strategies implied that vendors approach buyers in a similar way where they offered standardized software bundles that could require some degree of customization in order for the buyer to derive the maximum benefit from the applications. It can be deduced from the obtained results that the most competitive BI vendors are acting more homogenous towards buyers when they offer their products and handle customers, compared to niche BI vendors.

Keywords: Business Intelligence, Software production, Application Integration, Pricing Strategies, Security Issues, Definitions, Context

Introduction
Making the right decision has always been of major importance within any strategic field. Businesses are constantly under pressure to make the right decisions. Having the right information timely at hand is crucial for maintaining a competitive position in the market. In this paper we study the BI vendors. The core of the study focuses on vendor differentiation, although implications may be drawn for clients. Furthermore, as most of the larger vendors cover a huge area of soft- and sometimes even hardware applications, as well as associated products, it is difficult to overlook these aspects and solely focus on BI. Business Intelligence is a discipline which overlaps with other subjects such as Business Performance Management (BPM), Customer Relation Management (CRM), Decision Support Systems (DSS) and Knowledge Management (KM).

The overall objective of this paper is to account for how vendors chose to differentiate themselves in what has evolved into a homogenous business
environment. The focus of the industry lies in distinguishable differentiation in terms of pricing strategies, application integration and security issues. This paper does not intend to identify the individual differentiation strategies of single vendors. The aim is rather to generalize the findings across the BI market.

**Description**

Data collection in this research is conducted partly through one deep interview with Oracle, followed by eight completed online-questionnaire from vendors.

The questions asked in the interview are the same as in the questionnaire, but leave more room for discussion and depth. The interview was possible, using a digital recording device. Hence, the data collected through the online-questionnaire and the interview is considered to be primary sources of data. Secondary sources of information come in form of books and journals.

**Table 1 – List of Participants**

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Participant</th>
<th>Country</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle</td>
<td>Director BI Sales Consulting</td>
<td>GER</td>
<td>Interview</td>
</tr>
<tr>
<td>SAP</td>
<td>Product Management</td>
<td>GER</td>
<td>Online Survey</td>
</tr>
<tr>
<td>Micro</td>
<td>Marketing Director</td>
<td>USA</td>
<td>Online Survey</td>
</tr>
<tr>
<td>TIBCO</td>
<td>European Manager, Technical Sales</td>
<td>USA</td>
<td>Online Survey</td>
</tr>
<tr>
<td>Traction</td>
<td>President and Co-founder</td>
<td>USA</td>
<td>Online Survey</td>
</tr>
<tr>
<td>Asturgy</td>
<td>Marketing Director</td>
<td>NED</td>
<td>Online Survey</td>
</tr>
<tr>
<td>SAS</td>
<td>Academic Sale</td>
<td>SWE</td>
<td>Online Survey</td>
</tr>
<tr>
<td>QlikTech</td>
<td>Country Manager</td>
<td>SWE</td>
<td>Online Survey</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Marketing Manager BI</td>
<td>SWE</td>
<td>Online Survey</td>
</tr>
</tbody>
</table>

The BI vendors that were included in the research are presented above.

The population was defined as a result of an internet based research on Business Intelligence vendors. The Magic Quadrant for Business Intelligence Platforms report issued by Gartner Inc., an American based IT research and advisory firm, also provide insights into the BI market and which vendors are relevant. The program used to create the questionnaire was eVal.

The research questions will provide answers to the title and are limited within the context. They are as follows:

Q1. How versatile in respect to data exchange and integration are BI products today?
Q2. What are the major information security issues associated with BI products today?
Q3. How do BI vendors chose to differentiate themselves from their main competitors?
Q4. What pricing strategy do BI vendors pursue?
Q5. What are the main reasons for customer rejection?
Q6. What clients, servers and databases does the BI platform support?
Q7. How importantly do vendors view customer needs for a complete solution?
Q8. Where do BI vendors see their competitive advantage?
Q9. Where do BI vendors see their future opportunities and threats?

**Contextual framework**

According to Howson [2008] Business Intelligence is a set of technologies and processes that allow people at all levels of an organization to access and analyze data. Loshin [2003] uses the definition of The Data Warehousing Institute to define BI as “The process, technologies, and tools needed to turn data into information, information into knowledge, and knowledge into plans that drive profitable business action. Business Intelligence encompasses data warehousing, business analytic tools, and content/knowledge management.” [Loshin 2003, 6].

Business Intelligence may however be defined in many ways. Often vendors “craft” their own definition to show their tools in the best possible light [Langit 2007]. There are often not only different definitions of BI, but different terms are used to describe Business Intelligence. Thus BI is often wrongly referred to as Competitive Intelligence (CI), Business Performance Management (BPM), Executive Information Systems (EIS),
Management Information Systems (MIS), Business Information System (BIS) or Decision Support System (DSS) to name a few.

It is vital to distinguish between the differences in terminologies. E.g. according to Clifton and Sutcliffe [1990], DSS support the decision-making process and is most effective at calculating risk, as for example probability situations, where the manager is faced with a number of alternative choices. DSS enables managers to retrieve information ad hoc and as straightforwardly as possible in order to facilitate decision-making.

Executive Information Systems (EIS) are a function of a DSS, as they provide decision support to management, with information retrieval powerful display capabilities for business graphics, and communications. Thus the term EIS may be seen as an old fashioned term to describe today’s digital dashboards, which are also often described under Management Information Systems (MIS).

An Enterprise Resource Planning (ERP) system could be described as the backbone and perhaps basic IT system in an organization. The creation of ERP-systems integrates all the functional areas of an organization. Although ERP-systems can integrate all business transaction data, it is not a system for data analysis. These transactional systems, however, do not meet management’s needs to discover trends and patterns for performing optimized and effective decision-making. ERP-systems are designed to record and manage business transaction data. If BI and ERP are integrated, they contribute with additional value to the organization, which may be used to enhance ERP-systems. In contrast, analytical BI systems are designed to examine large volumes of data as a foundation for decision-making [Chou, Tripuramallu, & Chou 2005].

Business Performance Management (BPM), also known as Enterprise Performance Management (EPM), is a framework for automating, organizing, and analyzing business processes and systems that drive business performance to achieve maximum value [Blansfield 2003]. Indart [2006] concludes that performance management solutions are more process-orientated. Lee & Dale [1998] conclude that BPM could be considered a customer-focused approach to the systematic management, measurement and improvement of all company processes through cross-functional teamwork and employee empowerment. Bose [2005] claims that BPM is a combination of planning, budgeting, financial consolidation, reporting, strategy planning, and business scorecard tools. Specifically, BPM helps operational BI decision making become more proactive and timely, and support a wide range of business users [Ballard et al. 2005]. Therefore with regards to the analytical capabilities, one could argue that BI is a part of BPM. As Bose [2005] points out, Menninger concluded that “most vendors do not offer the full set of these components, so they adjust their version of the definition to suit their own product set” [Bose 2005, 50]. It could also be argued that MBP is so wide a term it risks to become equivalent to terms like Management, which at the end can come to mean all that managers do within the private organization. An overview of the definitions is presented below:

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI</td>
<td>Business Intelligence</td>
<td>A umbrella term referring to the technical side within private intelligence and the process of collecting, processing, analyzing and disseminating intelligence</td>
</tr>
<tr>
<td>BPM</td>
<td>Business Performance Management</td>
<td>A framework for automating, organizing, and analyzing business processes and systems that drive business performance to achieve maximum value</td>
</tr>
<tr>
<td>CI</td>
<td>Competitive Intelligence</td>
<td>A umbrella term referring to the managerial side of private intelligence</td>
</tr>
<tr>
<td>DSS</td>
<td>Decision Support System</td>
<td>Computer-based information systems that support decision-making activities by presenting alternative choices</td>
</tr>
<tr>
<td>EIS</td>
<td>Executive Information System</td>
<td>Computer-based information system providing easy access to both internal and external information relevant to meeting the strategic goals of the organization on a graphical user interface. Sometimes</td>
</tr>
</tbody>
</table>
The two most related terms are BI and CI. Defining the differences between BI and CI has caused considerable debates between practitioners and academics [Wright & Calof 2006]. The term has become clearer now that the impact of the technology side has become more evident. E.g. Solberg Søilen [2005] points out that Business Intelligence relates to the technical side whilst Competitive Intelligence relates to the managerial side within private intelligence. A logic overview of the most important terms is presented in a Venn diagram below (white background indicates IT based):

**Figure 1 – Logic of Terms**

Another question which often arises is the one about Knowledge Management (KM) and how it should be treated in respect to BI. Knowledge Management deals with the process of creating value from an organization’s intangible assets [Liebowitz 1999]. BI has more practical problem solving features, whilst KM more encompasses the realization and preservation of knowledge. Solberg Søilen argues that all subjects dealing with information and knowledge may be gathered under the term Information Management. Marketing is also an area into which BI often finds its way, especially when gathering data about customers such as through CRM. At the end what should decide what term is used for each study or specialization is if it can be clearly defined and thereafter its usefulness.

**Application Integration**

Within the context of enterprise systems, there is no single definition what integration entails. General consensus lays within the description that integration makes applications work together that “were not intended to work together by passing information through some form of interface” [Gulledge 2006, 5]. Companies that implement a BI solution often have an existing ERP-system from which they obtain the transactional data which is used for analysis. It automatically becomes an important issue how well the systems work together. Howson [2008] states that, historically, companies had to buy multiple BI front-end tools from different vendors, because no single vendors offered the full spectrum of tools. According to Howson [2008], as an example Microsoft Office Excel is sometimes referred to as the leading BI tool for creating spreadsheets. Hence, the importance of offering integration to applications such as the Microsoft Office Series or similar products with widespread usage.

From a customer’s point of view BI projects should be funded based on a projected Return-on-Investment (ROI) [Hedgebeth 2007]. On the other hand, Fuld [1991] argue that companies should not make an intelligence program a strict ROI issue. Yet, BI is often ROI driven. Companies that implemented ERP solutions and that were unable to justify ROI for ERP implementation, were sometimes implementing BI software since BI enhanced the utilization of the enterprise data [Chou et al. 2005].

**Security Issues**
There are several threats to computer security which of course influence the security of BI systems. Sanderson and Forcht [1996] show that there are a number of intruders that pose threats for a number of different reasons. Examples are foreign intelligence services, organized crime, terrorist organizations, industrial espionage agents, private investigators, and information brokers who illegally sell information as well as hackers. Security threats to system structures are constantly being added as the overlapping of computers, resources and industries, referred to as *convergence*, integrates IT infrastructures to provide more customers through established lines. Sanderson and Forcht [1996] argue that, “threats to companies through convergence have a great range” [Sanderson & Forcht 1996, 33], involving anything from fraud, unauthorized disclosure of information, and unauthorized modification of sensitive information, to information brokering.

Computer fraud and abuse may involve the accessing of computers without authorization or exceeding that authorization to perform malicious acts against computing resources. Generally regarded as the biggest threat to an organization’s information resources, however, are insiders employees and others in trusted positions with an organization that have great access to information within the organization [Denning 1999].

Regarding BI, there are typically two major security areas discussed in the literature: *role-based access* and *Internet security*. The first deals directly with the employees and the second more generally with computing. The two terms role-based access and Internet security are explained with greater detail below.

The weakest spot in a BI system may also vary. The information in OLAP structures is often very sensitive. The sensitivity can range from highly confidential internal data to data that has a high level of intellectual capital investment [Rasmussen et al. 2002]. However, IT security in general and BI security, are much broader topics than what has been suggested here.

Role-based security usually has roles defined for different levels of responsibility within an organization. Rasmussen et al. [2002] describe role-based access as associating a user ID with a role which has certain restrictions for information visibility. Employees that fall into certain areas of responsibility then become members of those roles.

Vendors often offer two types of licenses: named-user licenses and concurrent licenses. Named-user licenses are purchased and assigned to specific end-users, whilst the concurrent user licensing structure provides a specific number of licenses that may be shared amongst a group of users [Bontis & Chung 2000]. For example, a business with two concurrent licenses to an application that are set to three workstations can have two employees using the application simultaneously. A third user is not allowed and has to wait until one of the two users logs-off. Some vendors also offer different classes of users, for example a *standard user* and a *light user* license. The standard user is given full application access, whilst the light user is given a restricted set of features [Bontis & Chung 2000].

It may also be a great advantage to businesses making BI information available to its employees across the internet. It may range from information that is running on a secure connection to information that businesses wish to make public. The advantage of using the internet is that it offloads all the infrastructural responsibilities of an IT department, which could stand for significant savings. The downside is associated with security issues as the growing success of the Internet, make it easier to invade corporate privacy [Wright & Roy 1999].

**Pricing Strategy**
In terms of B2B software pricing strategies, there is not a single perfect generic pricing model. In a case study, Bontis and Chung [2000] conclude that “vendors must understand the value they provide to customers and create a price structure that aligns pricing with value realization, but more importantly facilitates their business objectives of the product and service.” [Bontis & Chung 2000, 246]. Thus, it depends on the need of the buyer that vendors align pricing with the buyers product goals.

Originally, as software ran on mainframes, it was priced according to CPU speed. This pricing method, based on processing usage, did not consider the needs of neither buyers nor vendors [Bontis & Chung, 2000]. As software architectures evolved through time, pricing models moved towards named and concurrent user licenses. Named-user licenses are purchased and assigned to specific end-users, whilst the concurrent user licensing structure provides a specific number of licenses that may be shared amongst a group of users. Bontis and Chung [2000] explain that the price structures, associated with concurrent licenses, charge customers according to their peak user predictions. A software vendor is, therefore, looking for both revenue maximization as well as market share as concurrent licenses are accessibly from a corporate site.

Additionally the license time is of importance. The possibility to offer a perpetual license, that is one that continues indefinitely [Bennet & Kosc 2002], or a term license, one which is limited in time and can be renewed are important and common possibilities for vendors to charge its buyers. Other possibilities are for example rental or leasing, where there are no boundaries set to the payment or pricing options. Hence, as concluded by Bontis and Chung [2000], software development is an output of a programmer’s intellectual capital, the pricing of software often requires a more subjective approach.

A recent study [Pricewaterhouse-Coopers 2008] shows that software vendor revenues are shifting from license fees to maintenance fees. The study explains that a consistent trend is the transition from large perpetual licenses to alternative models that stretch payments over a period of time. Other vendors are finding greater success by generating more revenue from maintenance and support instead.

Another trend that has emerged within the software industry are Software-as-a-Service (SaaS) solutions. SaaS is web-based software which is purchased on subscription basis and allows an organization to shift almost all their technological responsibility to the vendor [Lashar 2008].

The SaaS model is an objective pricing model based on transactions volume and usage. The adoption of a SaaS model, however, eliminates most of the challenges that occur with product installation and allows firms to optimize their resource allocation. [Bhingarde et al. 2008]

Lashar [2008] also states that SaaS can be a compelling option especially for larger business if the need for standardization, data centralization and BI exists as opposed to the need for differentiated functionality within the organization or specialized functionality; in which case, SaaS would not be an option.

**Results**

The overall objective of the paper was to account for how vendors chose to differentiate themselves in terms of pricing strategies, application integration and security issues. Nine research questions were set of which eight could be answered. One research question could only be answered partially, but is viewed upon as not answered.
The study collected data from a BI vendor population that what was set to one deep interview and 27 vendor questionnaires. Out of these 27 a total of 9 vendors completed the questionnaire, which can be said to have been expected given that no financial remuneration was offered.

The areas of application integration (Q1), security issues (Q2) and pricing strategy (Q4) can be summarized within this research to the BI market as that application integrated easily. The research question, what clients, servers and databases does the BI platform support (Q6), could only be answered fully. The reason for this is that the received answers could not be organized to support any general conclusions. Due to the way the question was phrased, the research question remains unanswered. Security issues (Q2) were mainly user centric and pricing strategies (Q4) implied that vendors approach buyers in a similar way where they offered standardized software bundles that could require some degree of customization in order for the buyer to derive the maximum benefit from the applications. It can be deduced from the obtained results that the most competitive BI vendors are acting more homogenous towards the buyers in the way they offer their products and handle customers, compared to niche BI vendors.

An implication that can be drawn for buyers from the obtained results is that buyers should carefully look at what they want to do with a BI system and find a vendor that has a definition of BI similar to the buyer’s vision.

More importantly BI vendors chose mainly to differentiate themselves (Q3) through their individual definition of how they define BI, as also stated by Howson [2008], to create a definition that best suits their products. We could call this the Selling Theory of the Business Intelligence label. Hopefully a clearer difference at to the meaning of the terms used, as suggested in the table and the Venn model above, can help avoid this.

There was no clear reason to why potential customers, such as customers that are in negotiations with several vendors, would reject (Q5) a vendor. One reason was that the vendor perhaps did not fulfill the client’s needs, but not what the underlying reasons were. Due to the received answers, it can be said within this context that vendors generally did not know the specific reasons.

Most vendors saw that their competitive advantage (Q8) was that they were able to offer the customer a complete BI solution (Q7) within the entire spectrum of BI applications, or that they were focusing on niche areas such as Traction Software. Not many vendors chose to answer the question where they saw their future opportunities and threats (Q9). Those that did, however, delivered some interesting market insights. The bigger BI vendors clearly saw their advantage in working with the full spectrum of BI tools and possibilities. Most vendors did not see any threats, or at least did not state them. One stated that it did not see any threats, but rather opportunities whilst another feared low-end competition from generic tools such as offered from Google and Microsoft. Most opportunities were seen in making BI available across an entire company and

![Figure 2 – Contextualization of contiguity within applied field of study](image-url)
thereby moving more towards operational BI. Oracle saw huge opportunities for BI for the future as the demand for decision making based on intelligence obtained from data is increasing. Further Oracle points out the possibilities that are emerging within RFID. Regulatory changes make it possible for data to be stored even longer and be used for analytics. TIBCO saw opportunities within pervasive BI, by optimizing today’s BI environment and responding to the emerging demand from this convergence to make decision making available in real-time within the right context to any specific business process. Traction Software looks towards a Web 2.0-style integration with ERP software, in the context of product development and manufacturing, with BI through human analysis, dissemination and issue tracking. Astragy saw possibilities within SaaS and SAS Institute within analytics while Microsoft expected future opportunities are to be found in making BI available to everyone within an organization.

References


Operational Business Intelligence: A Viable Concept

Matthijs van Roosmalen
Nijmegen School of Management
Radboud University Nijmegen
The Netherlands
matthijs@van-roosmalen.com

Abstract
This position paper seeks to conceptualize operational business intelligence (OBI) from two perspectives: the product view and the process view. In doing so it presents a holistic, non-IT biased overview of the current body of knowledge on OBI and places this in a wider context of related disciplines. The end-results are definitions of OBI form both perspectives, with the OBI cycle as a new way of viewing the operational intelligence process. This facilitates future research into OBI as well as the deployment of OBI activities to support operational decision making and continuous adaptation.

Keywords: Business Intelligence, Competitive Intelligence, Operational Business Intelligence

1 Introduction
Operational business intelligence (OBI) is an emerging field where business intelligence (BI), traditionally aimed at strategic decision making, is deployed in an operational setting. It has attracted the attention of both academics and practitioners due to both the proliferation of new technologies and the business needs arising from a volatile and competitive business environment.

Despite this growing interest in OBI, there is a lack of a comprehensive overview of currently existing literature, as well as a usable working definition. Some authors have contributed relevant work, in BI as well as related disciplines that can be typified as operational without labelling it OBI. As such the body of knowledge is fragmented and future research is hindered by lack of clear definitions.

BI is both a product and a process [Vriens & Philips, 1999]. As a process it consists of a number of activities ultimately producing the product intelligence from relevant developments in the environment. The same is true for OBI, and to understand and define OBI fully it is necessary to explore both the process and the product perspectives.

The goal of this position paper is to fulfill this need by conceptualizing OBI as both a product and a process. The resulting definitions and budding body of knowledge will allow more focused research into this emerging topic. They also highlight some relationships with other fields of study, encouraging interdisciplinary research as well as practical considerations for BI professionals.

To do this, in the next paragraph an intuitive understanding of OBI will be
developed in order to start the discussion. An overview of related work is presented in paragraph 3, positioning OBI in a wider context. The next two paragraphs discuss OBI as a product and as a process, constituting the main body of the paper. Finally, paragraph 7 summarizes the findings and gives some suggestions for further research.

2 What is “Operational” BI?

This paragraph will elaborate the concepts central to this paper. Before OBI can be discussed and defined, it is essential to develop an understanding of what ‘operational’ and ‘business intelligence’ mean in the context of this paper. Also an intuitive sense of what OBI’s goals are in relation to non-operational BI helps to position the discourse ahead.

2.1 Business / Competitive Intelligence

The literature on BI is diverse and has been the subject of several studies, revealing a multitude of perspectives and definitions [see e.g. Jourdan, Rainer, & Marshall, 2008]. Some authors focus almost entirely on IT systems when they refer to BI, meaning systems used to store, process and analyze data. They reserve the term competitive intelligence for the discipline, activity or process of gathering external data and generating intelligence from this data [e.g. Kahaner, 1997; Tyson, 1998; Fleisher & Blenkhorn, 2001]. Other authors have described competitive intelligence as synonymous with business intelligence [Vedder, Vanecek, Guynes, & Cappel, 1999] or as subset of business intelligence [Negash & Gray, 2008]. Often they distinguish between data gathered from within the organization itself, and that which originates in the external environment [Philips, 2005].

Regardless of which of these views is more appropriate, the object of this paper is not to get involved in this terminology debate. Instead it is simply established here that we use the term business intelligence to indicate a holistic approach of gathering environmental data and applying it in the context of organizational needs, not focusing exclusively on the supporting technology. According to Vriens [2004], this is in line with historical use of the term BI, before it came to be used by the software industry to refer to a specific set of IT tools.

2.2 Operational vs. Strategic

The traditional consensus regarding BI, as hitherto discussed, is that it is largely focused on strategy formation. When we consider OBI, we refer to the discipline of BI applied to the operational level of the organization rather than the strategic. Before we can proceed to define OBI, either as a product or as a process, it is imperative to understand what precisely we mean with the word ‘operational’ in this context.

A common trichotomy in management divides the structure of an organization into roughly three basic levels: strategic, tactical and operational. The strategic level is concerned with setting the overall goals and course of the organization, while the operational level is where the actual execution of the strategy takes place. The intermediary tactical level is usually seen as translating the overall strategy into concrete activities and guiding these activities.

In OBI, we have business intelligence that is focused on the operational level in terms of goals and applications. This does not mean that the data sources are located here, or that it has no consequences for other levels of the organization, but simply that it serves specifically the needs of the operational level. It is argued in this paper that this requires very different intelligence compared to the strategic level, as well as a specialized process.

Non-operational BI may also be referred to as ‘traditional’ or ‘strategic’ BI. This does not imply that OBI is a more advanced form of BI or should be pursued completely separately. It is simply a specialized variant that should ideally be
part of an integrated whole of BI and other functions supporting organizational decision-making.

2.3 Goals and Applications
What sets OBI apart from non-operational, strategic BI is exemplified through its goals and applications. The demands of the operational activities are different from those of strategic decision making, and as such present a different environment for BI activities.

The operational level is rich in interfaces with the environment [Aldrich & Herker, 1977] that span the boundaries of the organization. Sahay and Ranjan [2008] list four core groups of data sources for OBI, of which three are in the external environment:

- Employees
- Suppliers
- Customers
- Partners

This environment today is characterized by a high degree of uncertainty and rapid change, becoming ever more turbulent for organizations to navigate [Zohar & Morgan, 1996]. Forces such as globalization, changing demographics, demanding consumer markets, technological innovations and increasing environmental concerns are driving this turbulence [Laudicina, 2005].

According to Sadiq, Marjanovic and Orlowska [2002], this turbulence is manifested in the form of "changing process requirements and time constraints" for the operational activities. Coping with these changing requirements and constraints drives the case for OBI. In particular the operational processes require more flexibility, under highly demanding time constraints.

This reflects a critical difference between OBI and non-operational BI. Operational management needs different information to support its decisions than strategic management does [Marketos, Kotsifakos, & Theodoridis, 2007]. They depend less on historical data, and are more interested in real-time information about the daily activities on the floor. These decisions are set within the constraints laid out by the overall organizational goals and the available resources allocated by higher management [Beer, 1981].

Operational decisions govern the improvement and adaptation of the operational activities. OBI must support these functions by providing the relevant intelligence. As posited by Babbar and Rai [1993], “competitive intelligence gathered through continuous scanning should form the basis for changes on the operational level that drive continuous improvement”.

This continuous scanning through OBI supports a wide range of decisions which may directly influence the way the organization positions itself vis-à-vis the environment. An example may be the monitoring of procurement and sales on a daily basis, enabling the organization to constantly adapt its business processes and produce personalized products [Cingil, Dogac, & Azgin, 2000; Adomavicius & Tuzhilin, 2005] or provide recommendations to customers as a form of flexible marketing [Sahay & Ranjan, 2008].

The performance of the operational processes can also be watched and improved by using BI methods focused inwards at the operational level itself [Marketos, Kotsifakos, & Theodoridis, 2007]. This internally focused application of OBI borders closely on the discipline of performance management. Such related areas will be discussed in the next paragraph.

3 Related Work
There is much research in areas of BI that relate to operational activities, contributing to the development of a comprehensive body of work regarding OBI. Other disciplines focused on the operational level that somehow involve processing information or benefit from the supply of information from the organizational
environment, are also relevant to developing OBI. This paragraph outlines some related work that is relevant in the context of this paper. Of particular note to OBI is research into evolving BI practices to make it more agreeable to the operational level, such as reducing latency. Real-time BI has received a large amount of attention in recent literature [e.g. Weiss & Verna, 2002; Jeng, Schiefer, & Chang, 2003; Nguyen, Schiefer, & Tjoa, 2005; Seufert & Schiefer, 2005], due to trends such as the increasing environmental turbulence and the business demand for actionable information from analytic applications using real-time business performance data, exactly when and where it is needed. According to Azvine, Cui and Nauck [2005], real-time in this context can mean:

- the requirement to obtain zero latency within a process
- that a process has access to information whenever it is required
- that a process provides information whenever it is required by management
- the ability to derive key performance measures that relate to the situation at the current point in time and not just to some historic situation

Despite the recognition of multiple levels of BI [see e.g. Hussey & Jenster, 1999, p. 5], it has historically been focused largely on the strategic domain. Other disciplines have been developed specifically for information management at the operational level. These may include a real-time element for continuous monitoring. OBI introduces an outward looking process, focused on generating actionable intelligence from data regarding relevant environmental developments.

A relevant field for synthesis in this area is corporate performance management (CPM), as both OBI and CPM have an operational focus and affinity for real-time processing [Ballard, 2005]. Whereas OBI predominantly targets the business environment for relevant information, CPM collects internal data about the performance of the operational activities. Integrating these two sources produces a complete picture of the organization’s internal performance and external threats and opportunities, supporting decision making on all structural levels.

Another class of related disciplines concerns the management of the operational activities themselves and performing regulatory actions to control them. OBI can provide the intelligence required to support such actions, and is therefore closely linked to this class of disciplines.

The integration of BI with such approaches as business process management (BPM) and business rule management (BRM) has already been proposed (e.g. Golfarelli, Rizzi, & Cella, 2004; Marjanovic, 2005; Coenen, Hermans, van Roosmalen, & Spreeuwenberg, 2008). OBI is thus said to close the “execution gap” between having the information available and acting upon it directly [Keziere, 2006]. This is also commonly referred to as “sense-and-respond” [Schiefer & Seufert, 2005] and seeks to increase the flexibility and speed with which the operational processes can respond to impulses from the environment.

As Marjanovic [2007] notes, the above strongly favors an intimate relationship between OBI and business processes. Some work to elaborate this relationship has been done under the monicker "business process intelligence" [e.g. Casati, Dayal, Sayal, & Shan, 2002; Grigori et al., 2004]. This is essentially part of OBI, and contributed to establishing the process view as outlined in a later paragraph.

As a final note we briefly turn towards the issue of IT support. Examples of OBI supporting technologies include text- and data mining, BAM dashboards, rule engines, case-based reasoning and other tools implementing various AI algorithms and statistical analyses. Since this paper is not about discussing such tools, no specific examples will be discussed here, but various practical studies can be found in
the literature [e.g. Haake & Wang, 1999; Weiss & Verma, 2002; van Dongen et al., 2005; Azvine, Nauck, Ho, Broszat, & Lim, 2006; Coenen, Hermans, van Roosmalen, & Spreeuwenberg, 2008].

4 The Product view of OBI

In defining intelligence as a product, some authors refer to the ‘information’ or ‘knowledge’ obtained and used for strategic purposes somewhat vaguely [e.g. Gilad & Gilad, 1988; Fuld, 1995; Kahaner, 1997]. The origin of the term as such goes back to its military meaning [Kahaner, 1997]. Intelligence as a product is defined by Greene as “processed information, relevant to management, about the current and future environment in which the organization operates” [Greene, 1966].

A more specific model to put intelligence in the context of organizational decision making and clarify its conceptual relationship with the concepts of data, information and knowledge, is given by Vriens [2004]. This model arises from the functional definition of knowledge as “that which serves as a background for assessment of signals, i.e., perceiving, interpreting and evaluating signals, and as a background for performing actions, i.e., articulating, selecting and implementing actions” [Achterbergh & Vriens, 2002]. It states that an individual, or more generally a system, takes in signals from its environment (input) and performs actions (output) that influence this environment.

Perceived signals, representing data from the environment, are informative to the observing system when they produce ‘something new’ [Vriens, 2004]. To determine whether they do this, they need to be interpreted; given meaning. When the data has been interpreted, the observer can decide whether it is meaningful and whether action is required. All of this takes place within the context of existing knowledge. This is the case regardless of whether the system in question is an individual or an organization.

When applied to organizations and BI, the knowledge in this model refers to strategic knowledge; that is knowledge contributing to the process of strategy formation, the strategic decision-making process. The actions taken are strategic actions, and the process leading up to those actions takes place in the context of strategic knowledge. In this context, the information received is what we mean by intelligence. This is information that has been collected and interpreted in the context of strategic knowledge, with the purpose of contributing to strategic knowledge and the strategic decision-making process. Intelligence is the result of the perception and interpretation of data collected in a strategic context, and feeds into strategy formation, which ultimately leads to strategic action.

In the same vein, the model can be used to position OBI. Figure 1 shows it in this form. As a product operational intelligence it is very similar to the intelligence in strategic BI. The difference between the operational and the strategic manifests itself in the following three ways.
Firstly, the context in which the data is interpreted is the operational perspective. From this viewpoint, more detailed information regarding daily operations is relevant. The people involved in this interpretation of data will also have more detailed and specialized knowledge about the operational environment.

Secondly, this knowledge forms the background for the perception and interpretation of signals and the generation of actions. It can be referred to as ‘operational knowledge’. It is fed by operational intelligence which is the result of interpreted data, and is used in all steps of the action generating process.

Thirdly, these actions are operational rather than strategic, and thus only operational options are formulated. The emphasis is on actions affecting the operational domain, which can be carried out immediately, but exceptional situations may also be found which require an action that consists of reporting the situation to higher management.

The product of OBI, operational intelligence, can now be defined. Based on the contextual model discussed above (fig. 1) we propose the following functional definition:

Operational intelligence is information based on [external and internal] data, interpreted from an operational perspective, relevant to operational decision makers for taking actions.

A major difference in the way operational intelligence products manifest themselves vis-à-vis more traditional BI products, is the way they are presented. Whereas BI produces information primarily in reports and scorecards, disseminated through mailings and reporting structures, OBI needs to provide more real-time information and is directly concerned with how this information is put into practice [Seufert & Schiefer, 2005].

The extreme case, where the information is fed directly into the operational process, possibly but not necessarily through IT tools that automate decision-making, is an example of what den Hamer [2005] refers to as closed loop. It is also what Keziere [2006] refers to as closing the “execution gap” between collecting data and taking action based upon this input.

This direct involvement with execution blurs the line between OBI and disciplines associated with controlling and automating processes mentioned in the previous paragraph. For instance, Golfarelli, Rizzi and Cella [2004] view the closed loop as an essential component of a BI setup at the operational level. This requires that organizations integrate their intelligence infrastructure with the operational business processes [Marjanovic, 2007], which has consequences for the intelligence process itself.

5 The Process view of OBI

When viewing OBI as a process, we are referring to the process that produces the product of intelligence, as described in the previous paragraph. This process consists of a series of activities or tasks that ultimately produce intelligence from raw data concerning relevant environmental developments.

5.1 The intelligence cycle

Several authors have defined different numbers of activities in the BI process [e.g. Bernhardt, 1994; Kahaner, 1997; Den Hamer, 2005], but the most commonly held view of the traditional BI process incorporates four key activities:

Direction: determine the scope and the information need
Search: conduct search activities to collect data
Analysis: interpret data and synthesize findings into intelligence
Dissemination: distribute and apply the intelligence

Together these four activities are commonly referred to as the intelligence cycle, because the BI process is typically
carried out in a cyclical fashion. It starts with the direction phase, and a single iteration ends with dissemination. The cyclical nature provides the necessary opportunity to evaluate and correct the process for future iterations. The criteria for this evaluation are the goals set in the direction phase regarding the information-need. If these goals were not met, this calls for regulation; either by improving the process itself or adjusting its goals. If the goals were met, then a new information-need can be determined for the next iteration of the cycle. As has been seen in the previous section, the knowledge gained from the intelligence acts as a background for this new iteration.

The notion of a cyclical process producing intelligence applies to OBI as well. In an operational environment, the four basic steps of the intelligence cycle are the same. The information need will have to be determined, directing the search activities that bring in data. This data will then have to be interpreted and the resulting information distributed and used. This is all true for operational as well as strategic intelligence. The intelligence cycle is therefore a sensible departure point in grasping and defining the OBI process.

The precise nature of the activities that make up the four phases of the original intelligence cycle is different for OBI. In order to understand more precisely how the OBI process differs from the traditional BI, this paper will examine each of these phases in turn. But first the nature of the actual OBI cycle needs to be established, which illustrates a key difference compared to the original intelligence cycle concerning the way in which the process proceeds through it.

This difference stems from the need for near real-time intelligence at the operational level [Golfarelli, Rizzi, & Cella, 2004; Marketos & Theodoridis, 2006; Azvine, Cui, Majeed, & Spott, 2007]. This requirement implies that the duration of a single iteration of the intelligence cycle will have to be shorter than is the case in traditional BI. Whereas strategic BI might be served by going through the intelligence cycle once every few months, in OBI a matter of days or even hours would be preferred.

In this cycle, the speed at which intelligence is produced and applied is only as great as the sum of the time spent in all the different phases. The slower phases can therefore introduce significant latency. The demand for greater speeds at the operational level requires that every phase of the OBI cycle is executed rapidly, without a great deal of such latency [Sahay & Ranjan, 2008]. While BI technology can be made to incorporate real-time analytics [Seufert & Schiefer, 2005], this is a lot harder when people are involved in parts of the process, which is almost always inevitably the case, as OBI actually directly involves more people than traditional BI.
Everyone involved in the execution of the operational process is a potential source of data, as well as part of the wider audience for the intelligence. OBI tools and methods have to be available to workers in the daily operations, rather than a few people specifically selected for this purpose [O'Connell, 2007]. This is contrary to tactical and strategic BI, which is typically the domain of staff functionaries and targeted at middle and upper management [Marketos & Theodoridis, 2006]. At least it is probably safe to say that the initial direction phase will always have to be carried out by humans, as even the most sophisticated IT tools require some human input.

This suggests a duality in the implementation of the actions that are part of the intelligence cycle; between those actions that can successfully be automated and those that are better carried out by human beings. Conceptually this can be represented with a fork in the OBI cycle, after the direction phase. Depending on whether the agents carrying out the actions are humans or IT systems, the remainder of the activities will be different. Multiple instances of the BI cycle could then run simultaneously, each with a different cycle time depending on the nature of the activities and capabilities of the agents involved. Completely automated cycles can, once directed, continue to iterate without human intervention until a predefined exceptional situation is reached or humans decided to interfere and redefine the information need [Grigori, Casati, Dayal, & Shan, 2001].

Such a distinction between those processes and rules which can be automated and the ones which have to be executed by humans is a vital part of integrating business and IT systems, but needs to be approached from a holistic perspective [Coenen, Hermans, van Roosmalen, & Spreeuwenberg, 2008]. In taking such a process centric view as is preferred for OBI [Marjanovic, 2007], every operational process would be supported by one or more unique OBI cycles. The direction phase should not be neglected here because it always determines which cycle is going to be run and how, and the coordination of all the direction phases provides the holistic perspective required.

Figure 2 The OBI cycle represents the process of OBI, producing operational intelligence and applying it either through automation or human dissemination.
Figure 2 schematically depicts the OBI cycle as it has been described above. The light grey hue in some blocks represents activities carried out by humans, while dark grey colored blocks are the domain of machines. The gradient blocks are shared by both. This creates the potential for a double cycle, one of which contains exclusively automated activities. Note that this cycle can only be entered once a direction phase has been initiated earlier. The dotted line back to the direction phase expresses the fact that certain machine-generated exceptions or conscious human interference could break the automated cycle. Which course is chosen for each situation depends on the needs and time-constraints, be they (near) real-time or less critical.

5.2 Phases in the OBI Cycle
What such a real-time automated OBI solution might look like is presented by Nguyen, Schiefer and Tjoa [2007], who describe a loop that continuously:
- observes and collects events from a business environment
- converts the event data into meaningful business information
- discovers and analyses business situations and exceptions
- automatically selects the most appropriate actions for a response to the business environment
- executes the business actions based on the decision that has been made

The phases of the OBI cycle can be clearly recognized in these activities as search (1), analysis (2 and 3), and automation (4 and 5). The remainder of this paragraph will be devoted to briefly outlining these different phases of the OBI cycle (fig. 2) in more detail.

The direction phase is much the same as for regular BI, since all forms of BI need to be directed based on a certain information need. In an operational setting though, more people are likely to be involved in determining information need for two reasons. Firstly, each operational process may require distinct information. Secondly, organizational knowledge on the operational level tends to be more fragmented due to specialization [Postrel, 2002]. The challenge this presents is to coordinate the direction phase over multiple different OBI cycles.

The search phase is also similar. Like in the BI cycle, the OBI process draws on both internal and external sources of data. These sources have to be identified and then drawn upon, either by automatic data collection or by human search activities. Since every person involved in the operational process is a potential source of data, they should be involved in the search phase [O’Connell, 2007]. They may yield for example internal data about process performance or external data regarding customers. A specialized IT infrastructure may be necessary to support the fast processing required by real-time OBI [Nguyen, Schiefer, & Tjoa, 2005].

In the analysis phase, the time demands imposed by OBI are clearly visible. In order to achieve a rapid iteration of the OBI cycle near real-time, analysis will have to keep up. This inevitably involves large amounts of computerized analysis, but also on-the-spot interpretation by operational people [Seufert & Schiefer, 2005]. If sufficiently advanced tools are available, simulations of changes to processes and business rules can be used to do what-if analyses as described by den Hamer [2005].

The final phase in the cycle is split between disseminating to people and automating using IT systems or machines. The reason for this has been outlined above. In the disseminating phase, the acquired intelligence is relayed to the operational decision makers who defined the information need, and to all places where it needs to be put into practice. This can involve quite a large number of people, as everyone involved in the operational processes is potentially affected [O’Connell, 2007]. When the intelligence can be put to use in automated changes to
operational processes, the interface with these processes is direct, without human interference. This allows for the shorter, rapid cycle where certain automated operational processes react to continuous streams of intelligence concerning relevant events as described by Nguyen, Schiefer and Tjoa [2007].

6 Summary

This paper presented a discussion on operational business intelligence (OBI). OBI is concerned with generating actionable intelligence regarding relevant developments in the environment for the specific needs of the operational level of organizations. Compared to non-operational BI, these needs reflect some specific goals:

- improve the quality of operational decision making
- increase operational flexibility
- enable the continuous improvement of operational processes

OBI has been defined as both a product and as a process, filling a knowledge gap in the current literature. Along the way this revealed some crucial insights into the nature of OBI that have consequences for practice and future research.

The nature of the operational activities and their relationship with a rapidly changing environment calls for real-time or near-real time latency in the OBI process. This may require parts of it to be automated, which has far reaching implications for the development and deployment of OBI solutions and tools.

The OBI process is intimately related with the operational processes which it supports in improvement and flexibility. Much more than non-operational BI is the product of OBI directly actionable. Because operational decisions can be taken on a daily basis and directly affect the performance of the organization, the intelligence that supports them has to be closely tailored to the local needs.

This calls for close integration with disciplines such as BPM and BRM, which are concerned with the control aspect of the operational process. By directly connecting the intelligence flow to the execution, rapid changes and the continuous improvement envisioned by Babbar and Rai [1993] can be achieved. More interdisciplinary and holistic research is needed in this area.

Future research should focus on further developing and enlarging the body of knowledge about OBI, building bridges with related disciplines and attempt to form an integrated framework for supporting operational activities with environmental data.

As a first step the concepts discussed in this paper should be brought into practice, through case studies and field work validating the models and developing valuable guidelines for industry practitioners. As more experience is gained in the application of OBI, more refined models can be developed leading to a better understanding of this emerging discipline.

7 References


analytics for CRM. *BT Technology Journal*, 24 (1), 60-70.


"Les banques françaises pourraient éventuellement être reprises mais ne présentent absolument pas ce risque, d’autant qu’elles sont très vigilantes vis-à-vis des risques. (...) La CNCE étant un établissement mutualiste et par conséquent absent du marché, je ne vois pas comment il pourrait être convoité."

"L’extension des pratiques standardisées de gestion (aux entreprises mutualistes ou coopératives) tend parfois à effacer certains traits majeurs de la gouvernance démocratique." (quotation from Cadiou et al, [2006])

"Wir müssen sprechen und handeln, als ob, was sich gewährt hat, sich auch heute und morgen wieder gewähren werde; als ob Kommunikation nicht unwahrscheinlich wäre; als ob Konsens herzustellen, normalerweise problemlos gelänge" (Underlined word in the original text)

"Il est vrai que la crise est sévère, qu’elle va entraîner inévitablement des révisions stratégiques chez la plupart des acteurs, ne serait-ce que pour prendre en compte un environnement concurrentiel et réglementaire qui va se modifier. Pour Natixis, des ajustements devront intervenir, mais un certain nombre de lignes de force de notre projet stratégique ne changeront pas. (...) Les activités de banque de détail garderont un poids important (...)". 

"Soudain (...) Panurge (...) jette en pleine mer son mouton criant et bêlant. Tous les autres moutons, criants et bêlants en pareille intonation, commencèrent soi jeter et sauter en mer après, à la file. La foule était à qui premier y sauterait après leur compagnon. Possible n’était les en garder, comme vous savez être du mouton le naturel, toujours suivre le premier, quelque part qu’il aille."