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Enterprise Risk Management in Today's World: Enterprise-Wide Risk Management and Strategy, Part A

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Enterprise Risk Management in Today's World: A Current and Futuristic View of the Complexity, Resilience, Responsibility and Tools in ERM, Part B

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INVESTOR IN PEOPLE

Epigraph

Whenever a theory appears to you as the only possible one, take this as a sign that you have neither understood the theory nor the problem which it was intended to solve.

The old scientific ideal of episteme – of absolutely certain, demonstrable knowledge – has proved to be an idol. The demand for scientific objectivity makes it inevitable that every scientific statement must remain tentative forever.

Karl Popper

You can't depend on your eyes when your imagination is out of focus.

Mark Twain

Our greatest glory is not in ever falling, but in rising every time we fall.

Confucius

The position and momentum of a particle cannot be simultaneously measured with arbitrarily high precision. There is a minimum for the product of the uncertainties of these two measurements. There is likewise a minimum for the product of the uncertainties of the energy and time.

Heisenberg, in *Uncertainty principle paper*, 1927

The world is changing. Networks without a specific branding strategy will be killed I envision a world of narrowly niche services and tightly run companies without room for all the overhead the established networks carry.

Barry Diller, press Tycoon

'If a nation expects to be ignorant and free in a state of civilization, it expects what was and never will be. The people cannot be free without information.'

Thomas Jefferson letter to Charles Yancy (1816)

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Preface: Context for Linking ERM and Strategy

The complexity of the business context, combined with the intricacy and inter-connections of risk and objectives – necessitates the organisation implement a strategic approach to business and operational resilience. Indeed, there is a growing focus on resilience exacerbated by the pandemic and ensuing geopolitical upheavals. Resilience is the capacity to recover quickly from difficulties/ruptures; the ability of a business to spring back from any disturbance. This is quite critical and many organisations rightfully merge risk management and business continuity management into what is ERM, sometimes defined as a resilience programme.

Any academic studying risk-management can only be surprised that at a time when the world is becoming more and more complex and volatile, most MBA programs are still resting on old scientific principles: they remain founded on Democritus' description of the atom, or at best Bohr's. To be specific, management principles are still anchored on classical physics that allows five-year planning exercises. If governments dropped this practice after the fall of the Soviet Union, how is it possible that so many firms are still indulging in it? Could it be that too many managers have failed to recognise that times are no longer such that a deterministic approach to the future is reasonable?

Traditional physics is founded on the principle that similar causes have similar consequences and proportional causes have proportional consequences. This was fundamentally challenged with advances of modern microphysics, which can be summarised in the uncertainty principle, also called the uncertainty relations, set out by Heisenberg. To some extent, it is this research that opened the path to chaos theory, which does not yet seem to have influenced strategic thinking in most organisations, even if some visionaries appear to be inspired by it, consciously or unconsciously.

Of course, the founders of Apple, Google, and other GAFA come to mind. However, there are also leaders of start-ups and SMEs that may be visionary in their own right like the founders of Air B&B, Uber, etc. SMEs are at the heart of jobs and value creation not only in developed countries but also in emerging countries.

To summarize, it seems reasonable to assess that the strategic processes currently implemented in most organizations are too rigid and sequential. Strategy still relies on the idea that the world's evolution is a series of steps that allow for controllable processes. Resting on periodic reviews of their internal and external contexts, the leaders of these organisations operate without the continuous scouting of the future that would allow them to decipher low-level noises or sentinel events that facilitate an efficient forecast of future evolutions and anticipation of

revolutions so the organisation's relevance for its stakeholders' networks can be maintained at all times.

Major economic players, including nation states, have now the capacity to develop and implement models that are increasingly powerful and even include learning capabilities thanks to artificial intelligence (AI): 'Our systems learn by themselves from experience; however, we still choose their learning path. But we must always keep in mind that even the more complex games are more accessible to the computers than the general issues confronting the real world'.¹

However, even AI specialists remain cautious when it comes to replacing human brains with machines in complex decision-making. As for Werner Heisenberg, reading his principle makes it clear that he questioned the use of the normal distribution, thus opening the possibility of extreme situations, rupture, or black and grey swans. Risk Management Professionals prefer the concept of artificially enhanced intelligence.

About quantum physics, Heisenberg stipulated that as the exact position of a particle cannot be known at a given point in time, the future cannot be determined. A specific trajectory does not lend itself to a precise computation, but only a range of possible trajectories can be determined (however, using Erwin Schrödinger's equation, it is possible to assign a probability to each trajectory).

Economists have yet to produce an equivalent of Schrödinger's equation, as the economic world cannot be described with a simple list of drivers. It is complex and necessitates factoring in the human dimension so interactions are volatile and will need to be approached with fuzzy logic integrations. Would it be reasonable to expect forecasting the future with precision, when even the present eludes the human brain?

For risk management professionals, the good news is that uncertainty and risk must be more and more at the centre of all decision-making, strategic, tactical, or operational; that does not result in the world of decision-making belonging to risk-managers. However, all professionals have understood that the issue of risk has become essential in any decision-making; and they are ready to occupy the field should the existing risk-management professionals not step up to the plate. Competition for the attention of the board for risk issues is open with:

- internal and external auditors with their three lines of defence;
- quality control managers (*whose legitimacy in tackling risk is reinforced by the ISO9000:2015 which includes a chapter on risks*);
- security and safety specialists, economic intelligence consultants, and
- continuity managers (*another member of the risk professional community*)!

And the list is still open with resilience management as the newest entry. There is a growing list of risk-management in specialised branches but they can be gathered under one roof as they have common goals and use the same tools. With the proliferation of ISO standards dealing with specific risks, the erection of new silos can be feared.

¹Denis Hassais, founder of DeepMind.

There is no doubt that risk-management has a bright future, especially after the pandemic and the geopolitical unrest, even if it might be shared by many, indeed by all practitioners. As far as the risk-manager's function in any organisation is concerned, even adorned with the title of CRO, a function that is still developing after over two decades of existence while the CIO is now widespread and involved in cyber-risk management, it will survive in this maelstrom only if the incumbents can acquire the talents and competencies needed to grasp what is at stake and manoeuvre to make it to the front of the pack!

The management of risk is a director's and officer's mission; there is not much debate about it now that the codes of governance worldwide tend to assign them direct responsibility and liability to develop and guide their organisations' policies with a clear understanding of and due consideration to the uncertainties and storms of the future. However, without proper gears and relays at all levels in the organisation and with its main partners, the extended enterprise, even the best-defined policy would have little effect on the well-being of the organisation, or society at large.

Managing risk is a core mission for all public and private actors. The survival of all depends on the vigilance of each one. This has a special echo for those individuals who have been trained for Special Forces or intervention units and those dealing with terrorist attacks!

Furthermore, the generalised explosion of social media, now a key player in all social debates, means that transparency in communication and consultation with key stakeholders has become essential; however, it may interfere with speedy decisions required at the early stages of a rupture when a dramatic strategic change may be called for.

Whatever the situation, any new strategy has a reasonable chance of success only if all those involved embrace the change, not only within the organisation but also beyond, i.e. both internal and external stakeholders. This is the reason why a continuous strategic process must be developed and implemented, provided it is informed by global and integrated risk-management and positioned in a change management effort where all can be heard and listened to.

In such a context, the question of democracy in the company, which was at the heart of the debates at the end of the sixties during the students' upheavals, seems to gain new momentum. However, it is unlikely that there will be a 'one size fits all' route to democracy. Sometimes it will surge from the base, others it will result from the will of top management, but success will require both to meet on a common course.

When it comes to change, top management must do it, but all those involved must then embrace it. There is no unique strategy to develop and implement the instruments and processes of resilience, and this is indeed the case for the guidelines proposed in the ISO 31000 standard: it is a toolbox where each artisan must find the most efficient way to use them in each organisation.

In a world evermore complex and volatile, it is not reasonable to build models on deterministic approaches or one man's vision; therefore ERM (Enterprise-wide Risk Management) becomes a key as it offers an approach in which uncertainty is at the centre of any decision. Furthermore, ERM top-bottom and bottom-up

paths ensure that all adhere to permanent change, whereas change is what destabilises human beings in any society, as well as any organisation.

As far as democracy and equality are concerned, nobody (except for a few admirers of Proudhon) wants to stray from capitalism, but many want to see a return to the reduced levels of inequality that prevailed before the late eighties.²

Readers looking for simple solutions or checklists will be disappointed. The present book is not a cookbook with recipes but rather a book of questions, on all the challenges that any entrepreneur, director, officer, or elected official must meet if (s)he is to promote resilience and justice for the future in a very uncertain context, and to navigate safely through the high seas ahead. ERM does not set aside hazards but aims to optimise risk-taking: enhancing opportunities and curbing threats. ERM is therefore in essence at the core of any strategic exercise.

If climactic change is not heavily mentioned, it is because there are already many books offering experts' thoughts on the matter, from the likely causes to the prevention and protection measures that could be implemented not to mention the GIEC reports.

Furthermore, most of these solutions are beyond the domain of decision and strategy of individual actors, even if individual efforts should not be undervalued. There is also the nagging issue of artificial intelligence, already mentioned. OECD expects AI will become a major threat to humankind within twenty years, but investigations into this scenario seem still at an early stage despite recent developments like chatGPT. However, all organisations must consider these risks in their strategic process at the horizon of 2030/2050. As with other emerging risks, AI and climate change are sources of threats, but they also offer many opportunities for innovators, including transition risk.

²Atkinson, A. B. (2015, May). *Unequality – What can be done?* Harvard University Press. <http://www.hup.harvard.edu/catalog.php?isbn=9780674504769&content=reviews>.

Part 1

Theoretical Contributions to Risk Management

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Chapter 1

Enterprise Risk Management: Cindynics Contribution

The capacity to estimate the total cost of accidents or disasters is an essential element in justifying the allocation of resources, particularly financial, for prevention, protection, risk engineering, and more generally risk management. Is it now an important factor in determining the budgets to be allocated to prevent or contain future pandemics or other natural or technological disasters? For the health sector, it is also a way to raise public awareness of its role in creating a safer society and to improve the perception of risk in the public domain, even in France the problem of white planes.

The strategic process begins with a description of the organisation's situation in its context. The situation emerges from a list of networks of actors concerned, stakeholders of sustainable development. While it is fundamental that the description be holistic, different models propose such an approach including:

1. Corporate functions approach:

It lists the 12 functions noted from R1 to R12, which are essential for the establishment of governance that is extended to the entire company:

- R1: Human Resources;
- R2: Finances;
- R3: Marketing;
- R4: R&D – Research & Development;
- R5: IT – Information Systems;
- R6: Strategy, Planning/Budget Control;
- R7: Risk Management;
- R8: Legal;
- R9: Audit;
- R10: Communication;
- R11: Logistics;
- R12: Purchasing/Supply.

2. *Resource classes approach:*

In Louisot's 2023 book on risk diagnosis,¹ an impact model has been developed in France to identify all the uncertainties that weigh on the future of an organisation thus allowing it to navigate in the best interests of its stakeholders and value creation in compliance with the values. The space of vulnerability uses three dimensions to achieve this goal and facilitates a complete diagnosis.

The five networks (or resource classes) of the vulnerability space are:

- **H = Human:** All persons linked to the organisation by employment contracts or mandates, and whose specific skills, training, and experiences make it a real asset for the company. Demographic data such as age, sex, and family status, which may have an impact on production capacity, should also be taken into account. In a nutshell, these are the elements considered, because it is traditional to call 'knowledge management', skills or talent management.
- **T = Technical:** Buildings, equipment, tools... in a word, all the physical assets within the organisation's direct scope of control. The legal nature of detention is secondary to direct control. Some belong to the organisation and are recorded in the assets of its balance sheet, some are at its disposal under a lease or leasing agreement, and others are on deposit and belong to third parties, including partners. There may be other situations that would take too long to fully identify here.
- **I = Information:** All the information flows that circulate within the organisation, that are transformed or stored, whatever the medium (computer, paper, or human). The resource also incorporates information about the organisation itself: the perception that others have, i.e. the organisation's stakeholders of the organisation. It can be summarised in the term 'reputation' among emerging risks. These are therefore all elements at the heart of the mission of economic intelligence.
- **P = Partners (upstream, downstream, & lateral):** All the support of the economic partners of the organisation, upstream (subcontractors and suppliers), downstream (customers), and lateral (co-contractors, known or not, in a global project) essential to the organisation to achieve its objectives or fulfil its missions. These are the partners, for the most part, who are under contract with the organisation and are therefore in a transaction with it, without forgetting their dependency networks.
- **F = Financial:** All financial flows through the organisation. They affect both short-term flows (cash, liquid, or near-liquid assets) and medium- and long-term flows (financing plan, equity and reserves, and long-term debt). In a nutshell, it's the strategic financial management of the organisation.

¹Jean-Paul Louisot *Comprendre et Mettre en Œuvre le diagnostic des risques* (AFNOR Paris 2023).

However, the model would not be complete without a sixth network that represents non-contractual exchanges with the environment and externalities in the sense of the economy:

- G = 'Free' Resources:

- Physical environment;
- Political, legal, & social environment;
- Competitive & benefits from third parties ENVIRONMENT.

These five networks plus one are a condensed version of the 12 functions of the previous model and allow for consideration of all the resources that are needed to develop and implement a strategy. In this model, vulnerability/exposure is characterised by the set of impacts on an organisation's objectives when an event occurs changing the amount of a resource.

For this framework, three factors define an exposure:

- Risk object (or resource in risk);
- Random event (peril or hazard); and
- Potential impact (on the organisation's objectives).

Today, it is no longer enough to consider only financial impacts on an organisation; the consequences for stakeholders in the context of the ESG must also be considered, therefore damages are distinguished as follows:

- Primary and secondary damages: those related to the organisation itself and its resources, including induced damages such as additional costs or operating losses.
- Tertiary damages: those affecting third parties or the environment.

The analysis must also take into account the positive risk (see Fig. 1.1). Of course, it is important to keep in mind that threats to the organisation may offer opportunities for competitors. Furthermore, risk management's mission is to seek the optimal balance between positive and negative risks, i.e., enhancing opportunities and containing threats.

Alignment between risk management and strategy:

The concept of 'exposures portfolio' is a clear step in leading the integration of risk management into the design and implementation of the organisation's strategy. By enhancing opportunities and containing threats, not only before taking the road but also throughout the stages, risk management contributes to the path to excellence.

The resources can be linked to the multiple functions of the management team, i.e. Human Resources, Finance, Marketing, R&D (research & development), Information systems, Strategy, Planning/Budget Control, Risk management, Legal, Audit, Communication, Logistics, Purchasing, etc.

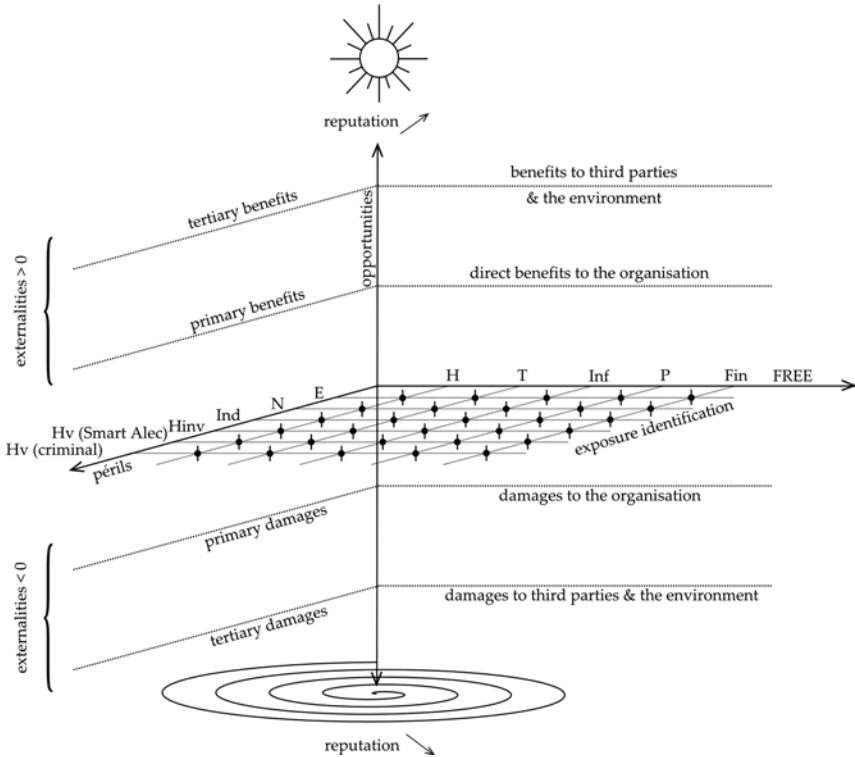


Fig. 1.1. Exposures Space. *Source:* Louisot (2023).

The representation of this process in a circle provides evidence for:

- Strategy development (outside circle);
- Multi-annual planning (central circle); and
- Development of annual budgets and action plans (inner circle).

This approach incorporates two important mechanisms:

- Truly holistic resource allocation and active attention from all professionals;
- Alignment between annual budget decisions and strategic priorities (the divergence between the two ‘time spaces’ is often the main obstacle to a successful implementation of a strategy).

The interface between strategy and risk management induces the need for interaction between strategy manager and risk manager. The model supports cooperation as it aims to understand the chain of causality that leads to events and the chain of consequences of induced impacts. Managers could legitimately imagine merging the two functions to build flexible and adaptable strategies to adapt to changes in external and internal contexts during their implementation

and to ensure greater consistency. A new definition for the job description of the CRO (Chief Risk Officer) might be needed as the scout of the uncertain.

- **Bowtie model:**

The components of a systemic strategic plan taking into account all aspects of an integrated management approach are consolidated in a register. From a strategic perspective, risk has always been seen as positive, i.e. opportunities as cash flow generators, but too often it has ignored the negative, the threats. Conversely, in risk management, until the recent advent of what is now known as Enterprise-wide Risk Management (ERM), the risk manager was only in charge of negative risks, i.e. threats, that could compromise the achievement of 'the strategic vision' of leaders. This old model is still found in many except those with international stature.

Precisely, with its focus on objectives and/or missions of the organisation achievement, the model proposed here invites all risk owners to identify all vulnerabilities and to assess impacts, threats, and opportunities, any significant change in the level of an organism's resource by distinguishing direct impacts on the organism itself, primary impact, and those on its environment, including its partners, tertiary impact.

This approach coupled with the 'bow-tie' shown in Fig. 1.2, which provides a simplified version of the systemic analysis but also invites to ensure that a 'feedback', is in place for each systematic incident/accident. Of course, this does not remove the need for the scenario approach (for what has never happened) and the in-depth analysis thanks to the cindynic situation concept for complex systems with major sociological components (see below).

The model of the bowtie above lists the causes before the event (and the resources at the heart of the suggested device) and through a tree of causes can identify the chains of causality to be interrupted and analysed by the tree of consequences, right can define the consequences, positive or negative, on the organisation itself and all stakeholders.

Together the space of exposures and the bowtie should allow leaving unknown no major uncertainty. However, there are potentially promising or hazardous situations left out if a system is too complex to lend itself to the linearity of the

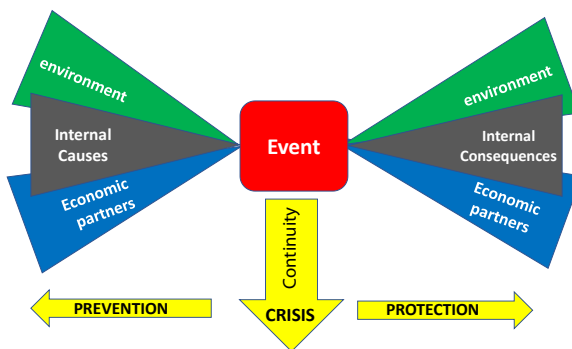


Fig. 1.2. Bowtie Revisited.

approach chains of causes or consequences. This is the case for systems in which the relationships between men and the socio-cultural context are essential. The root causes analysis using the cindynic model makes it possible to find the fracture lines of the system before any sign of rupture occurs.

Fig. 1.2 lends itself to further comments:

- ⇒ On the left side, the causal chains are identified around the poles that constitute the main functions of an enterprise and are recorded as R(J) while the exposures space model focuses on resource classes and affects their management only in a second step depending on the breakdown of the system into sub-systems called risk centres. The cooperation between the CRO and the CP (Corporate Planner) ensures the holistic management of threats and opportunities.
- ⇒ On the right side, the CP and CRO are working together to assess the cost/benefit implications of different solutions. However, if there is no reliable database of the past, then the Bayesian network approach (see below for risk quantification) makes it possible to rely on expert advice to initiate a recurrent process to build experience data. This is particularly the situation faced by institutions that implement operational risk management systems (like Basel 2 for banks and Solvency II for European insurers).

Other approaches are possible but we have taken the step of promoting those that combine conceptualisation and practice to be applicable in any organisation.

• ***A fundamental concept – the cindynic situation:***

‘Cindynics’, the term comes from the ancient Greek κίνδυνος (kindunos) which means ‘hazard’ (IMdR, n.d.). This discipline was officially founded at La Sorbonne on 8 December 1987, during a symposium on technological risk management bringing together industrialists, doctors, sociologists, insurers, etc.²

Cindynics includes all the sciences and techniques that study hazards, associated risks, and their prevention. It is a systemic approach based on different complementary disciplines – humanities and natural sciences: sociology, economics, chemistry, etc. – to allow the mapping of the global context of a situation

The object here is to provide the essential aspects of the Cindynic approach to better understand the synergy between the cindynic and the five resources models. The concept of cindynic situation is central to the practical implementation of cindynic concepts. It requires a clear definition of the actors who will be supported (internal and external stakeholders), as well as the space-time object of the study. In general, ‘actors’ are grouped by affinity over a set of common characteristics, i.e. networks of actors.

In the description, only functional fields or resources have been highlighted to find common features. The practical interface between strategy and risk management has already been stressed above reconciling the six resource

²The initiator that convened the conference was G-Y Kervern.