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A Turbulent and Paradoxical Environment

The 1990s were the start of a new era, marked by two major revolutions: the advent of economic financialization, and the mass diffusion of the Internet.

1.1. Economic financialization and its challenges

In his latest book, Gomez [GOM 13] offers an original analysis of economic financialization and the manner in which it is manifested in the behavior of businesses. We have based this writing on his analysis. The roots of economic financialization lie in the investment of savings by households which, desirous of preserving these savings, aspire to the security and liquidity of their investments. This is what is offered to them by the finance industry, which transmutes household savings into financial products such as SICAVs (*Société d'Investissement à Captial Variable,* "investment company with variable capital"), common investment funds, and life insurance products. The finance industry's task is to place the resources collected in safe and profitable investments: safe, so that the savings are not lost in risky business ventures; and profitable, so that the profits earned, rather than the businesses' capital, procure a profit for the savers in the form of dividends. From this perspective, household savings are directed mainly toward large companies that are listed on the stock market.

The stock market, as a second-hand sharemarket, ensures the liquidity of investments; the preference given to large companies is justified by their perceived economic stability: they are considered "too big to fail". What occurs next is a phenomenon of attraction: the more capital businesses obtain, the more they become interesting investment targets for funds. Because they are powerful and their capital is liquid, they attract new investments. Money attracts money.

There has also been unprecedented competition between these large listed companies, which secure and seek to secure household savings. They must in fact attract the large-scale attention of backers by producing the expected profit and by clearing at least as large a profit as their competitors do. Therefore, companies outdo each other to prove the merits of their use of the capital they seek to obtain. In other words, they mimic each other in order to fulfill what they see as the market's expectations of them. These common projected expectations include the imagined market requirement of 15% profit on the capital invested; the speed with which the critical profit margin must be reached; and the necessity of becoming global, or of maintaining flexibility. The means chosen to achieve these objectives are as similar as the objectives themselves. They include innovation, business mergers, strategic international growth, and development of sophisticated managerial monitoring and reporting tools. These tools are intended to note, via the power of computer information systems, how each activity contributes (or does not contribute) to the final result, thus rationalizing the activities of these organizations. The result is that the organizations have been put under increasing pressure: large listed companies most of all, but also other companies, partners, clients, suppliers, and subcontractors, on whom the large companies put a great deal of pressure to achieve their own objectives.

Finally, and in an exaggerated manner, a direct link can be established between the savings of millions of small and anonymous households, and the mimetic behavior of thousands of large and small businesses under intense pressure in an ever-more competitive environment.

1.2. The mass diffusion of the Internet and its consequences

Though they are often cited, we believe that the massive transformations engendered by information technology remain under-evaluated. However, in his book, Friedman [FRI 05] emphasized the driving role of the Internet in global evolution. Remember that, above all, what we call the Internet is really a consolidation of various information technologies, some of which do not yet use the Internet protocol (text messages and Blackberry messages, for example). A piece of technology consists of a technique and a useful logic (techno + logic); there are many techniques or applications (the Web, Skype, Twitter, Peer to Peer, videos, newsgroups etc.) and various ways of using them. Understanding the distinction between technique and logic is very important. A mobile telephone[1], for example, is not necessarily a tool used to exchange voice communications over a long distance[2]; it can often be a short-range coordination tool[3], as in "I'll be there in 2 minutes. I'm here, can you see me?". It is also important not to confuse these terms: the Internet is a protocol and the Web, for example, is an application that uses this protocol. The headline of the August 2010 issue of *Wired* magazine clearly showed this nuance: "The Web is Dead. Long Live the Internet". This showed that the Web was no longer the dominant application for the enduringly dynamic protocol that is the Internet.

Let us look at two examples.

On September 15, 2008, the Lehman Brothers investment bank went bankrupt after 150 years in existence. This failure was rooted in a panic that drove investors to withdraw their money at the same time. Banks cannot survive this type of situation since they do not possess enough ready cash. Certainly, to ensure their clients' trust, they invest money in securities that are liquid enough – that is, easy to resell in the case of mass client withdrawals. However, this liquidity has limits, the exceeding of which is statistically controlled in a confidence-based situation. They also invest the savings entrusted to them in diverse securities in order to ensure the safety of the investments. How then to

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1 Technical component.
2 Logic component.
3 Another logic component.

explain the crisis of confidence around Lehman Brothers? Where did the panic come from, and why had no one foreseen it? Information technology played a role in this bankruptcy; should it also play a role in avoiding such a situation?

Another example can be found in the numerous movements that have rattled the Arab world for the last four years. These have demonstrated a massive use of communication tools; whether in private communications within groups, local coordination or the diffusion of images or propaganda, all of the participants have used these technologies. These technologies are not the source of the movements, but the role of lever played by them is undeniable. The way in which social movements both act and react on the Internet thus requires the development of new models of analysis.

The lesson we can draw from these two examples is that it is becoming nearly impossible to have a precise image of a situation. The dynamic of technology blurs this image by causing it to evolve continually. Without clear visibility, it becomes impossible to predict the future, even in the short term. Yet classic methods of data analysis and prediction continue to dominate managerial thinking.

Technology has come to play more than a paradoxical role. On the one hand, as we have noted, it makes situations more unpredictable. In fact, the participation of individuals in network activities has passed a threshold [GLA 00] and this human−technology blend of information destabilizes existing models. On the other hand, their ever-increasing capabilities are leading to the development of extremely powerful systems of analysis. The concepts, which we will discuss, of Big Data and Open Data, for example, have recently borne witness to the development of these capabilities, and three subsequent articles in the *Harvard Business Review* perfectly illustrate this resurgence of analysis [BAR 12; MAR 13; WIL 12].

1.3. The paradoxical coexistence of scarcity and abundance around data

Very large volumes of data are being produced today by both individuals and organizations. This production is the result of an

ever-increasing use of communication resources in permanent interaction with the information systems of multiple organizations. The growing use of the Internet comes to mind, as does the ubiquity of mobile telephones, which today allow the whole world to be connected via telephone media, but also via mobile Internet accessible by Smartphones. Even without dwelling on the booming industry of all sorts of sensors for capturing data of every type[4], which frequently interact with, and provide useful information to, organizations, the list of the principal "producers/generators" of data remains largely incomplete.

These large volumes of data pose multiple questions to the organizations that collect and/or generate them, due in particular to their size, diversity, and the resources that must be implemented in order to exploit them; this is what we call Big Data (BD). There is consensus on one point concerning this data, and that is the vast potential it possesses with regard to the analysis of political opinions[5] or industrial trends[6], epidemiology, or the fight against criminality[7], to cite just a few examples. With skill and the appropriately adapted computer resources used in its capture, storage, processing, and analysis, this data can give us direct access to the reality of physical or social phenomena that have been out of reach until now. That is why Big Data is regarded today by some as the new scientific revolution [MCA 12].

Open Data (OD) is a phenomenon connected to Big Data. Here, an organization makes some of its data freely available via the Web so that it can be reused by private individuals and/or businesses.

The OD phenomenon is the result of a double (r)evolution:

– Technical, with the exponential growth in volume of digitized data (Big Data) and the collaborative nature of the Web 2.0.

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4 Data on weather, pollution levels, the frequentation of a communication channel, etc.

5 http://123opendata.com/blog/big-data-campagne-presidentielle-us/.

6 http://lecercle.lesechos.fr/entreprises-marches/high-techmedias/internet/221144150/big-data-adn-utilisateur-sequencable-moins-1.

7 http://www.lemagit.fr/technologie/securite-technologie/2012/03/12/la-eacute-curit-eacute-met-eacute-solument-laquo-big-data-raquo/.

– Political, since the OD movement is supported by most Western governments, led by those of the United Kingdom and the United States.[8]

More precisely, OD was born in the United Kingdom in 2009, the brainchild of Tim Berners Lee, the principal inventor of the Web, who envisioned switching from Web 2.0 to government 2.0. It can be defined as the use of Web 2.0 collaborative tools to make a government, via its administrations, more open, transparent, collaborative, responsive, and efficient. It is simultaneously motivated by a new democratic momentum based on the restoration of public data to the citizens who actually own it, and by the development of a new culture based on efficiency thanks to the exploitation of resources (open public data) that were previously used mostly or entirely internally.

We can see today a generalization of the release of public data on a geographical level[9]. These public projects share the same objectives of democratic transparency, participation, citizen involvement, and economic development. For example, on April 11, 2012, the ANACT network (*Agence Nationale pour l'Amélioration des Conditions de Travail*, "French national agency for the improvement of working conditions"), which is aimed at improving work conditions, made a group of interactive maps available to Internet readers. The objective of this data is to better understand various work contexts, so that potential users can suggest solutions adapted to these contexts.

The OD movement is spreading geographically, but it is also gaining ground in the private sector:

– via companies acting by order of public service, who are therefore affected by the legal obligation to data openness, such as the Suez environmental group or the RATP[10], for example;

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8 Note that after some hesitation, France opened its sole interministerial public data portal, data.gouv.fr, on December 5, 2011.
9 It has even been made obligatory in France via European directives and national legislation, as an opposable law.
10 French public transport operator, *Régie Autonome des Transports Parisiens* (Autonomous Operator of Parisian Transport).

– but also, and especially, as part of a voluntaristic strategy on the part of private companies, a strategy related to the analysis of opportunities in terms of business, image or innovation (we may cite, for example, the SNCF [11] in France, or the Poult group, which specializes in manufacturing cookies, as a distributor brand) [BLU 11].

The data released by organizations is intended to be used by individuals or other organizations. To this end, OD compiles large volumes of available data whose potential lies, particularly via Big Data, in the development of new businesses founded on the basis of this data. However, in addition to the issues specific to Big Data (capture, storage, processing, and analysis of very large volumes of data, etc.), there are issues specific to OD. These are organizational in nature, presuppose that organizations determine their objectives in matters of OD, and assess the risks associated with it. It is only in this way that they can choose the data they will release (with or without rights) and that they will know how to define the procedures relative to the opening of this data. They must also learn to manage the collaboration with communities of users in order to attract private citizens, interested individuals, associations, journalists and researchers, and incite them to manipulate this data in order to draw from it new applications and new services and to create value [LEB 10]. It is a matter, then, of these organizations developing new skills. OD also raises technical questions, since the data must be cleaned up and redesignated before it is released. It raises legal questions as well, with the current coexistence of various types of data-protection license regulating the use, particularly the commercial use, of public data. Finally, it raises societal questions around the democratic functioning of governments and the risks of drifting related to a "safe" use of this Big Data, or a "populist" use in the analysis of data by unscrupulous individuals [LOB 12].

In order to keep their promises, such as the improvement of client satisfaction, for example, the development of an ecosystem of partners and the sped-up market release of new offers in accordance with consumer expectations, BD and OD assume heavy investments. The

11 French public railway company, *Société Nationale des Chemins de fer Français* (National society of French railways).

resource constituted by this abundance of data will remain only potential, unless it is accompanied by human skill and the hardware and software necessary to manage it. The human skill aspect is particularly important, since in order to process this data, the experts must have highly specialized skills combining information technology, statistics, and big business, which are rare indeed. On the hardware/software side, the Big Data market is in the process ofstructuralization, currently bringing together important players such as Oracle, IBM, EMC, Informatica, and Microsoft, which offer solutions based on the Hadoop open source model[12], as well as start-ups, since with the computing cloud, which allows for powerful access to storage and processing on demand, companies no longer have to be large in order to work on large masses of data.

Here, we see the paradox of scarcity and abundance that exists around this data. Information systems have not been spared the budgetary reductions stemming from the increasing pressure placed on organizations, yet the ever-tighter competitive environment requires ongoing improvements in competitiveness and efficiency. The result of this is a reduction in the margins of organizational maneuvering. These margins, also called *organizational slack* [RIC 10], play a fundamental role when organizations undertake new endeavors such as BD and OD. In fact, these solutions may appear to be flourishing, but their emerging nature requires room to maneuver for the inevitable and necessary trial and error.

1.4. Unique simultaneity of crisis and immobilism

The crisis that began in 2008 and is still affecting the entire global economy no longer requires proof. Its consequences in Europe and particularly in France remain weighty. In addition, the observation of a certain kind of immobilism of companies in the face of this crisis situation seems particularly surprising. To illustrate this immobilism, we will look at four sectors that appear to be experiencing difficulties

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12 Apache Hadoop is an open-source software framework that supports data-intensive distributed applications, licensed under the Apache v2 license. It supports the running of applications on large clusters of commodity hardware. Hadoop was derived from Google MapReduce and Google File System (GFS) papers.

in generating business relationships with their crowds: the banking, postal, and television sectors, and finally the training sector in the case of universities.

1.4.1. *The online banking sector*

To date in France there has been no independent retail bank existing solely online. In view of this, we will try to understand more clearly why such an activity (retail banking) has not been the subject of major innovations over the past decade. It is indeed surprising to read, in a 1997 issue of the newapaper *Les Echos*, the following sentence calling the development of the Internet:

> "An evolution that has not escaped the French establishments, which are beginning to explore the Internet, following the example of Banque Direct (www.banquedirecte.fr)." [DEJ 97]

In 2013 the exploration continues, but it seems that this is a sector particularly favorable to virtual relationships.

First of all, it should be noted that the activities of a retail bank are perfectly suited to online processing, particularly for the reasons below:

– Currency in itself is a more and more dematerialized and universal concept, as a transfer of €1,000 between France and Finland bears witness.

– Products and services are themselves intangible (a credit or an investment in a savings product is a virtual activity).

– The advising aspect does not seem to require a wealth of information, since it involves only face-to-face relationships.

– The opening hours of banks are the same as those of a standard work day; it is not a given for a client to go and see his/her banking advisor.

Next, banks aim at reaching a large number of people of all ages. Young people are targeted as future clients as well. Thus, initiatives to

ensure their loyalty are multiplying (sponsorship, free credit cards, etc.). Older individuals are also being offered adapted services, such as retirement services. Professionals are courted as well, particularly via customized credit. Moreover, in early April 2013 the Crédit Mutuel site offered three login points: young people, private individuals, and professionals.

Finally, banks rely on a solid computer architecture which, even though it is often externalized, remains sturdy. Banks also have a certain capital of trust in terms of their ability not to make mistakes or commit criminal acts (compared to relationships with private individuals).

Yet, in mid-2013, innovations of separation in the banking domain are hardly perceptible, and the following questions remain without a concrete response:

– How can increased client volume be used to generate business activity other than the traditional banking activity?

– How can traditional banking/insurance activity be developed using the resource of the diversity of client skills?

– Who will be able to compete with a major social networking entity (such as Facebook) when Facebook begins offering ways to make virtual payments?

– What are the responses to a service like Paypal?

– Why have physical offices?

In the face of these questions, which are general in nature but of capital importance for banks, the only responses given have been classic externalizations, particularly those of computer services. None of the responses involve turning to the client crowd, or a true virtualization of the relationship.

1.4.2. *The postal sector*

The blossoming of e-commerce has been relatively slow in France, but it has accelerated considerably since 2007. Let us look at the case of a company specializing in the private sale of "remaindered"

goods.[13] This company has exceeded €2 billion profit for more than two years, and for some brands there are more than 1 million people registered, and 470,000 products have been sold in a single stroke. Obviously, these products need to be dispatched. The internal, logistical aspect of private sale seems extremely costly, since a service provider must deliver the products to their buyers. This single example illustrates the immense opportunity for the postal sector that is constituted by this online commerce. Yet, at least in France, separation innovations in the area of parcel delivery are difficult to find. However, more than 15 years ago, Nicholas Negroponte was already suggesting the installation of refrigerators at building entrances to facilitate the night-time delivery of fresh products. This excellent idea has yet to be implemented. There has been no taking into account the possibilities of crowd participation and implementation. This is unfortunate, as all the ingredients are present:

– Most parcels do not require any particular skill in their handling.

– Tracking and traceability technologies (mainly radio frequency identification (RFID) and barcodes).

– Enormous need: there are huge numbers of parcels to transport as effectively as possible.

This second example clearly shows the existence of opportunities that have not yet been seized.

1.4.3. *The television sector*

This 1-to-N mass diffusion media is universally deployed. It is a sector which, particularly in France, was constructed in a traditional manner with organizations externalizing few tasks. The development of the Internet then led this sector to evolve, and budgetary constraints in particular motivated the development of partnerships with well-identified service providers (production companies, photo agencies, etc.). The simultaneous development of globalization also had an immense impact; indeed, it has become impossible for a channel to retain a dense network of reporters ready to supply information about

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13 https://secure.fr.vente-privee.com/.

events liable to occur all over the globe. The competition posed by sites like YouTube is also very strong. Reporting of high technical quality has been replaced by jerky images filmed with mobile telephones. Unlike the two previous examples, television channels including France 24 very quickly came to rely on more or less well-identified individuals for the provision of content. France 24's network of observers now numbers several thousand people who send reports each day which the channel's editorial service then verifies and decides whether or not to broadcast.This initiative shows that it is possible, and even highly pertinent, to use the crowd in pursuing its principal activity. However, this example also emphasizes a certain restraint in the use of the crowd. In reality, it accounts for only a slight percentage of the reports broadcast, and the decision to broadcast is made solely by the television channel's directorate.

1.4.4. *The training sector: French universities*

The eight-century-old French university system has developed in fits and starts; often a worldwide leader, it also occasionally lags behind. Once again, the development of technologies both has constitued and does constitute a source of profound evolution. New competitors are arriving while old ones disappear, and above all, new ways of teaching are emerging. Long-distance learning, also called e-learning, is a theme that became fashionable between 1995 and 2000. It should be noted that the confidential nature of this type of learning was retained in France. However, today, all of the elements are in place for the development of a commercial training offer based on this remote approach. Indeed, the example of the course on Artificial Intelligence given by Professor Thrun of the University of Standford, which attracted nearly 160,000 students, is a highly alarming sign.[14] A viable business model should not be too hard to find. Would a French student not be ready to pay €500 to have an online degree from MIT? And (160,000 x 500) = 80,000,000 – quite a tidy overall profit.

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14 These are called MOOCs (Massive Open Online Courses). The EDx initiative launched by Harvard and MIT is also beginning to bring out new ideas for the future of long-distance learning.

1.4.5. *The conclusion to be drawn from these cases: the crowd remains an underexploited resource*

This point, based on four examples (banking, the postal sector, television and universities) shows that in the current context, an organization faces major challenges. To date, the principal solutions envisioned have been classic externalization and outsourcing; but these classic management methods have reached their limits. Organizations are evolving in extreme situations; that is, situations that can rapidly turn into crisis situations. These organizations cannot keep eternally improving their efficiency using classic methods; they need to find new ideas and new resources. It seems necessary to find new opportunities for potential customer bases as well. Like other researchers [BOU 13], we believe the crowd is one of these. It may prove to be a major resource, particularly for organizations that have access to a widely-connected crowd that often wishes only to participate. In the four illustrations we have shown (crowd x technology) = creation of opportunities. However, the implementation of methods to benefit from these opportunities is no simple matter. In this, a deep understanding of the concept of crowdsourcing and the attentive observation of new companies using this opportunity may constitute a source of inspiration leading to the overcoming of the crisis-immobilism paradox.