

More Analytical than Data: "Choral Intelligence" in the Management of

"Predictive Behaviour"

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Abstract: Machinery and technology have now assumed one of the core duties that have traditionally befallen entrepreneurs, namely, the search for information about their businesses and its subsequent organisation. Today's more streamlined information and knowledge processes have transformed the entire value chain and paved the way for its standardisation. This has had a strategic impact, as business intelligence now has time to address what really matters: dealings and experiences with markets, users and customers.

The ultimate aim of such intelligence and experiences is the early identification of conduct in the form of "predictive behaviour".

This paper summarises the state-of-the-art in these developments, the usages and tools being used as regards these predictions in sundry economic sectors, and the development of these practices toward what we define as "intelligence units" in a services economy in which the presence of intangible assets is set to prevail.

Key words: intangible assets; predictive behavior; choral intelligence; intelligence units

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1. The Onrush of Data in Business

When this article was written in 2014, the way of understanding and doing business, the position of business leaders, the strategy of organisations and corporations, in other words, the very heart of business, had undergone a fundamental change. Business leaders throughout the entire history of the industrial and mass consumer economy have championed a culture of individualism: each one knew their own "business" and its corresponding market, they knew what had to be done, and so devoted their time and capabilities to keeping "up-to-date", being briefed on the trends in their sector, new developments, and openings in their field. This was a mundane process: gathering information, adjusting procedures, updating their product range, reinforcing their customer portfolio, and strengthening goodwill, for example.

Along with other operations and functions, this routine task of gathering and processing information is now being performed by machines.

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The most valuable aspect of today's business strategy does not therefore involve finding information on matters of interest, but consists instead of having the time to interpret relationships and come up with the questions that the machines need to be asked. People have so much information that we can focus our energy on its exploitation, leaving machines to perform the humdrum task of gathering and organising it¹.

In modern capitalism, the processes of creation, production, distribution and sale in different industries are based on the same principles. The value chain, from the original design through to the point of sale and delivery to the customer, is basically the same and depends on the range of assets in the process, whereby the product or service's development lends greater weight to physical materials or human resources or to finances, or (the latest consolidated asset) to intangibles.

The most credible assumption is that the last one of these, intangibles, actually define the process, with a secondary position applying to standardised production methods (whether manual or automatic), such as the overabundance of human resources or financing (mythologizing those huge corporations dominating the global economy that were born in a garage and began life penniless). Intangibles are the ones that make the difference $(Timoteo, 2013)^2$. The billionaire investor, George Soros, says that modern capitalism is a hall of mirrors in which one cannot distinguish between reality and illusion: one does not know whether the dog wags its tail or the tail wags the dog. A capitalism that is made up of signs rather than of true wealth..." (Ruffolo, 2006)

We consider that, in reality and as in so many other situations, the definition and reinforcement of intangibles has not been the consequence of any form of strategic design or a moment of brilliance by consultancy firms or governments, but instead it is the outcome of praxis, of the search for answers to problems or needs in the enhancement of organisations. Since 1980, large corporations have begun to operate on a global market, and are encountering difficulties on various levels.

For example, the need to make themselves known in what for them are new markets, the application to employees of certain ways of doing things in their new operating countries, formally establishing their relationships with the authorities in their host countries and markets, calculating the risks and modus operandi with local financial institutions, for example, and in general, the process of creating competitive advantages that will provide differentiation in their markets. This has steadily given rise to activities, programmes and tools that created an "intangible space", with a growing weight firstly within the business structure and subsequently within the overall economy (Hardin, 2014). Based, therefore, on the experience of the past 30 years, we understand that organisations have had to respond to several kinds of demands and challenges, and have developed accordingly a series of programmes and activities that, under different names, we may group under the heading of "Intangible Assets". Figure 1 outlines the ones that are better known and more widely used.

These three sets of expectations that have been generated by the global market have led to the development of a series of tools, programmes and procedures that provide a structure for Intangible Assets. There is a plethora of literature and references on all these developments, although there is as yet no conceptual consensus on the matter, or a dominant model, as regards the way in which corporations have responded accordingly. Quite the contrary, in fact, as the significant differences in their applications and the diversity of criteria in their valuation show they are still in their infancy (Lönnqwist, 2006; Mouritsen, 2003).

¹ Medina Carmen, a specialist leader in Innovation at Deloitte and former director of the Center for the Study of Intelligence at the CIA. Interview in *El País Negocios*, Madrid, 16 February 2014, p. 26.

 $^{^2}$ The author explains how reputational capitalism has become systemised, how intangible assets have been organised and managed, and how communication and its channels have evolved to take up a position within the very heart of organisations and businesses.



Figure 1 Development and Organization of Intangible Assets since 1980

It is often the case that each one of the different ways of doing things (e.g., reputation) involves an overall view of the industry, and all the tools and methodologies that may be expedient are subordinated to the specific goals in each case. We are therefore in a constituent process, and a few more years will be required until we have a clear understanding of everything related to these assets. It is true to say, however, that significant progress has already been made on each one of these "sets of expectations".

The key developments and operations are those that involve Information and Communications Technology (ICT) on the internet and web, through the management of content and the tools that have evolved extremely rapidly from the Community Manager, and its instruments of Search Engine Optimization (SEO) and Search Engine Marketing (SEM), to the tools of web analytics and, above all, Data. The referent for all today's ICT, and everything associated with the management of intangibles, is the so-called Big Data "Big Data is like teenage sex: everyone talks about it, nobody really knows how to do it, everyone thinks everyone else is doing it, so everyone claims they are doing it..." (Elliot, 2014)

The reason is that computers and the cloud collect all the information, perform all the processes, and provide the setting for competition, strategy, and business developments: in 2000, only 25% of the information held by firms was in digital format, with 75% being analogue, above all on paper, microfilm, or similar. By 2013, 98% of the information stored around the world was digital, with only 2% being kept on other media. 800 million Facebook users produce on average 90 items of content per month, and the 490 million YouTube users upload in two months a volume of content that exceeds the production of all US TV channels in the last 60 years. All this accumulated content has popularly been referred to as Big Data, an unending flow of unstructured real-time data provided by millions of digital sources of a very diverse nature³. Big Data is the sum of information that exceeds the capacity of normal software to collect, store, manage and analyse data. Large corporations such as IBM, Microsoft, Oracle, and Teradata, for example, are beginning to provide software solutions for processing and storing this flow of data. They operate with distributed data stores they refer to as "NoSQL" (Not only SQL or

³ The definition and summary is by McKinsey.

structured query language). Examples of these NoSQL databases are Cassandra, Cloudera, Amazon SimpleDB, and Hadoop. The last of these has been tremendously successful: it is provided by Apache Software Foundation as open-source software, and it has been developed by Yahoo and improved by a huge community of spontaneous users. Hadoop is used by companies such as eBay, Twitter and Facebook.

The partial analysis of data in this enormous globosphere is still in its early days, and operations involve mainly a traditional marketing method applied to the Web 2.0, considering the web to be a standard source (e.g., a newspaper) and its analysis as the analysis of content. They manage to measure internet popularity, positioning and reactions in a quantitative and essentially qualitative manner. A second stage has involved developing a system referred to as "media analytics" or "social marketing analytics", which allows measuring, evaluating and explaining communication and disclosure strategies within the context of specific business targets. It provides information on the following: (1) "Counting Metrics", or the number of followers ("follower", "fans"...); (2) "Business Value Metrics", or reputation involving stakeholders; (3) "Outcome Metrics" (KPI), or key indicators in the development of the business in relation to its goals; and (4) "Foundational measures": integration, empathy, influence and relationship with the community (Cosenza, 2012).

In a third stage (the sector evolves exponentially, and the perspectives might change over a few months), corporations have tailored their developments in such a way that every aspect of daily life is affected by ICTs and their uses.

These tools for storing, structuring, and viewing data/information facilitate the creation of knowledge, and are used in all kinds of disciplines and sectors, ranging from astronomy to medicine, and from physics to the social sciences, scientific knowledge, community engagement and governability, customs and morals, consumerism, etc. (Hardin, 2014).

In marketing, for example, such tools have enabled Netflix and Amazon to develop recommendation engines based on the visits and purchases made by users.

Targets of all kinds can be identified by monitoring indirect items that, through the use of algorithms, may reach extremely reliable conclusions. Credit companies do the same to identify risks, and a similar methodology is used to work on marketing forecasts, social evolution, and so on and so forth⁴.

Among those companies that assess the present and future of ICTs, one that garners special respect is the Gartner Group. It publishes an annual index called "Hype Cycle for Emerging Technologies". The enclosed table provides a graphic of its expectations for 2014 and ensuing years.

One of its forecasts for the coming years is technological development (always referring to ICTs) "(as) linked to specific strategic trends...for any category of uses...related to the extent to which companies incorporate them into their processes". It singles out ten prevailing trends, all defined by the conjunction between "Mobile" and "Cloud": management of mobility; applications for the same; the Internet of Things; hybrid of cloud with IT for user services; generalisation of the cloud among end customers and customised cloud; software for each occasion and product; 3D printing, etc. This graphic provides an accurate snapshot of an almost monothematic tendency in the development of companies.

There is in all of it, however, some element of truth and a certain degree of hype. There appears to be a consolidated prevalence of the smartphone and the Cloud. Yet from there on everything seems to be shrouded in

⁴ We may mention, among hundreds of possible titles, the ones we have consulted: Shaw, 2014; Mayer-Schonberger, Cukier, 2013; Farris, Bendle, Pfeifer, Reibstein, 2010.

doubt: who will dominate the market for remote control and operation: the "Internet of Things" based on sensors ("Smart Things"), or "QR Codes" for identification and geolocation ("the Internet of (dumb) Things") or the Traceability Codes for monitoring products? (Morozoz E., 2014, p. 33). And so on in all fields.

Nevertheless, the Gartner graphic ends with the concept of "Predictive Analytics". It is the ultimate goal: the ability to predict. This is the final frontier of myriad processes on the internet and in online intelligence.

2. The Ultimate Attraction: Predicting Behaviours and Ideas

Prediction in Social Sciences, the ability to foresee and influence the future, has never received much credibility. The unforeseen nature of the current economic crisis is the most obvious example. Scientifically speaking, we have consolidated the premise, dating back to the days of Karl Popper, that we can predict physical phenomena (e.g., an earthquake) but never social situations (e.g., a revolution). This adage is still upheld, although it has undergone a series of tweaks over the past one hundred years. The first of these adjustments involves the introduction from quantum theory of <u>probability</u> as a real factor in any developmental process: we cannot be certain of being right when we calculate the evolution of the market or of prices, but we can work with statistically and mathematically preferential probabilities that are highly accurate, and therefore close to being certain. The second of these adjustments involves <u>chaos theory</u>, whereby minor or insignificant events or elements may radically change processes that have been physically and rationally foreseen (the clearest example is to be found in meteorology), introducing randomness as a key factor in calculation processes. A third and more recent adjustment involves <u>the possibilities that IT allows</u> for working with large amounts of data that reduce the margin of error in surveys, and permit a more accurate understanding of people's behaviour and their expectations on both an individual and a collective basis.

This third factor, software and intelligence dedicated to monitoring and analysing web content, is changing the science of prediction, given the ease of quantitatively and qualitatively handling information that provides a more accurate approach both to statistical probability and to the configuration of credible chaotic maps, thereby rendering it possible to operate within the cognitive and heuristic processes that govern the decision-making process in individuals (Barabasi, 2011; Buchanan, 2002). Moreover, and above all, they allow monitoring behaviours (behavioural economics) as a guide for formulating high-probability hypotheses on people's opinions, feelings and beliefs, voting options and purchasing choices (Silver, 2012). Daily praxis as regards "predictive behaviour" and the efficacy of forecasts in predictive processes enjoys significant contributions: "active listening" tools mean that predictions continue to be uncertain on a social or systematic level, but become extremely accurate on an individual or personal level. Thus, Amazon can predict our preferences in the purchase of books; the banking sector can predict our financial trustworthiness, and insurance companies can calculate our likelihood of having an accident... shopping, travelling, leisure, love, illness, relationships, charity, work: everything we do is influenced decisively by the application of data mining methods. It is almost certain that, in response to political and commercial interests, there will be further developments in predictive tools, especially those that qualify individual behaviour. It is also highly likely that these tools will jump from the analysis of individual behaviour to target groups, and then on from these target or focus groups to society as a whole (Sunstein, 2013)⁵.

This explains why in many facets of politics, society and economics, the tools used for "Data Analytics" and "Predictive Analytics" considerably increase the ability to predict behaviours and trends, make complex decisions

⁵ Cass R. Sunstein was the first director and administrator of the Office of Information and Regulatory Affairs (OIRA) in 2009.

in real time, optimise costs and increase revenue, reduce fraud, epidemics, or crime; in other words, study human behaviour, and specifically human social interaction, in a way that has never been done before.

We may single out certain noteworthy examples of what is being achieved in this matter in both the public and private sectors:

<u>The drafting of the political agenda</u>. Back in 2009, the Obama administration set up the Office of Information and Regulatory Affairs (OIRA) applying Active Listening tools to the behaviour of the population at large, measuring the behavioural processes that predict the decisions made by individuals and, on the basis of this analysis, proposing lines of action in good governance, interactively adjusting expectations in behaviours to governmental proposals. Along these same lines, in 2010 Cameron's government in the United Kingdom created the Behavioural Insight Team (BIT) ("Cabinet Office, Test, Learn, Adapt: Developing Public Policy with Randomised Controlled Trials"). Its remit is similar to that of OIRA: to develop simulation strategies with tests/trial-error for shaping government proposals.

<u>Prediction of criminology</u>, whereby identification may be made of patterns of behaviour in the population, and as appropriate bring the state's resources in line with its requirements. One such example is the "Smart Steps" programme that Telefónica is pursuing in London in partnership with the Massachusetts Institute of Technology (MIT) and the UK's Open Data Institute (ODI). By using anonymous mobile network data, they calculate the population's displacement around the city and use it to predict social behaviour on a more or less massive scale⁶.

<u>Prediction in economics</u>, whereby predicted values are obtained on the outlook for the economy and for a more accurate estimation of the government's budgets.

<u>Prediction in health</u>, whereby healthcare can be improved through the control of medical costs, making the appropriate savings, and adjusting medical infrastructures and pharmaceutical stocks. The predictive analysis of patients' medical data and records allows pre-empting possible relapses and the corresponding re-admissions, as well as developing the logical actions in information and prevention⁷.

Prediction in the banking sector, whereby the control of lending risk and the prediction of fraud are especially significant at this moment in time. Data analytics is bringing about a sea change in decisions in the banking sector, playing an increasingly more vital role in more accurate decision-making, in the streamlining of operations, and in smoother dealing with customers, in the prevention of fraud or errors, or in capitalising new sources of funds. In practice, these processes allow operating on three different fronts: (1) Market Insight and Trading Decisions: they advance a better understanding of the customer market and the financial performance of economic agents. The mobility of both parameters, forecasts on the purchase and sale of products, and on the niches of innovation in corporations, allow predicting the future. (2) Customer Insight: the tools of social media analytics can be used to identify changes in lifestyles and predict the behaviour of consumers in relation to expected market trends; the banking sector can use this information to introduce customer loyalty strategies and relationships, as well as launch products and attract new customers. (3) Risk Analysis and the Prevention of Fraud:

⁶ "Using data available on the neighbourhood (variables such as demography, its ethnic profile, social class, type of dwelling...) allows predicting 62% of the crime rate. With Smart Steps, this percentage rises to 68%, and even higher when combined with other types of data". Oliver, Nuria. Chief Science Officer at Telefónica Research and co-author of a study on the prediction of crime in London, cited by Miguel Angel Criado (September 2014) in the article "Los datos móviles predicen en que zona de Londres habrá un crimen" [Mobile phone data predict where crimes will be committed in London] *El País*, Madrid.

⁷ In the case of diseases such as diabetes, where the skill in correlating patients' medical records with data on their consumer habits (potentially provided by a basket analysis of the retail market) will make it possible to more accurately establish the exercise the patient needs to do, and enable doctors to reach new conclusions that they could never have even imagined. Carter, Philip (September 2011). "Big Data Analytics: Future Architectures, Skills and Roadmaps" for the *CIO IDC White Paper*.

it is crucial for the banking sector to be able to identify and pre-empt the behaviour not only of specific customers but also of criminal organisations that seek to deceive and defraud the banking system in all matters related to credit risk, fraud and so on. The latest methods in the prediction of risk and risk analysis record reliable results before any decision is made, and do so not by using samples, scenarios or clusters, but instead by studying the behaviour of individual persons, individual cards, specific and unique cases, analysing them one-by-one, and not necessarily applying the same logic across the board.

<u>Prediction in sales or retail networks</u>, whereby businesses are in a position to roll out real-time pricing policies that are hugely effective, which start by mapping all price-points, assessing the level of elasticity, and identifying the more and the less visible aspects of pricing in consumer decision-making. A second step involves juggling several promotions at the same time in order to optimise the return on the current stock of products. A more analytical level will enable us to undertake a more dynamic management of pricing in real time depending on the time of day, the day of the week, the outlet's location, or even weather conditions⁸.

<u>Prediction in MKT, CRM and CSM departments</u>, involving the use of new analytical models that collect data from the social media, monitoring users and analysing sentiments, reputation, loyalty... This allows reacting to trends in a timely manner as they develop, and identifying those individuals or groups of influencers that generate them. The MKT paradigm has changed to one of engagement, meaning involvement/interaction, where the aim is to arrange actions that will establish a dialogue with consumers, whereupon everything that is said will become measurable. MKT has been transformed into an information science in which all the data can be analysed and measured with a view to then formulating new and more effective strategies and action plans. When launching a new product or targeting a new market sector, the use of Predictive Analytics for planning, anticipating and predicting new tendencies is still of incalculable value (Dhore, Davenport, Hongsermeier, 2012)[°]

<u>Prediction in HR departments</u>, operating with employee data in order to fine-tune performance — for example, in the case of a manufacturing plant that produces more successfully than another one, it would be useful to know the workers' profiles: the level of training they have received, their wages, their backgrounds in terms of experience or professional milestones, level of education, place of residence, projects in which they have been involved, who their peers are, their internal/corporate social data and external/social networking data...⁹ It will soon be possible to audit the workers' performance or good or bad management in real time, and immediately decide whether an error in performance or management is about to be made, and rectify it in time.

<u>Prediction in Tourism, Defence, Education, the Environment</u> and sundry other fields: processing and crossing data of various kinds (e.g., social networks, mobiles apps, and websites) will help us to better understand and anticipate consumer habits and preferences, and premises in all kinds of decision-making. The list of applications is endless, with the ultimate aim always being to predict behaviours and influence them.

Yet, as we have already noted and shall stress in the following lines, the accumulation of data in itself, while admittedly essential, is not the key factor. The return gained from the data depends on added factors such as the prior definition of the goals to be achieved, the quality of the actual data (it should not be forgotten that the internet is a huge rubbish tip), and their transformation into what we refer to as Grass Data — basic data for the

⁸ For example, Tesco has discovered that whenever the temperature rises by four degrees in the UK, the sale of hamburgers increases by 42%, so the retailer dynamically adjusts its production and distribution in order not to miss out on sales due to a lack of foresight. Cited by Hilario Albarracín (November 2014), CEO, KPMG España, *Lecture on Big Data at the British Hispanic Forum*. Bilbao.

⁹ A study by Deloitte reveals that those engineers with greater social empathy, with more friends, who share more information, outperform their more solitary counterparts. Bersin Josh (14/2014), "The Datafication of HR", *Deloitte Review Issue*.

development of new technological processes whose purpose is, for example, to reduce costs in maintenance and management. *Above all, efficacy depends on Human Intelligence applied not only to the interpretation of these accumulations, but also to its systemisation, Systems of Network Intelligence (Human)*. This is our hypothesis and our working premise (Strong, 2015)[.]

The technology used to collect, analyse and view results is evolving at breakneck speed. There is an entire industry of *start-ups* that are working day and night to launch new services onto the market. They are focusing on the development of three kinds of tools:

(a) Display — with desktop tools that allow end users to draft and analyse reports.

(b) Middleware — for capturing databases, screening and storing information: this includes the tools used by Hadoop.

(c) Management and analysis — companies that develop comprehensive services for data collection, management, and analysis.

This activity, like any other, has its own problems; and we are now going to briefly describe the ones we deem to be of greatest and more immediate concern. The first involves privacy and security: the data and, in general, the bulk of the information that people/consumers provide involves information that is not only commercial but also personal, private and designed for their use alone, over which they have full rights of ownerships and disclosure. According to a North American Customer Experience Report, 86% of users are concerned about data gathering, while 85% of those polled said they are willing to pay above the standard price of a product or service to ensure they receive a superior experience¹⁰. There is a thin line between what consumers want and what they fear, which is why privacy can be an opportunity or a risk even from a clearly commercial or political perspective. It may be, however, that people are willing to accept a transaction, a purchase or sales deal, involving "my data in exchange for …": "People want two things: transparency, so if you're gathering data I should know about it (…) But if you are collecting data, as a consumer I should receive something in return, it shouldn't all benefit the company. If you are not ready to give me something in return, I shouldn't have to give you my data. Reaching this point calls for the greater education of consumers to enable them to make decisions"¹¹.

The second major risk is nonetheless methodological, of no consequence at all as regards the results: any research or scholarly project will produce unexpected results that are statistically valid. This is because NETWORK INTELLIGENCE creates a different methodology in research into Social Sciences, for those analyses that involve Economics, Society or Social Communication. In the past, researchers planned their experiments by deciding on the data to be collected, ordered and analysed, and then fitted their procedures to the hypothesis they had formulated beforehand. Now, thanks to the low cost of gathering and storing data, the process is the other way round: there is a vast amount of information available to everyone that can be applied specific models of exploitation and analysis, and from which all kinds of findings and ramifications can be deduced. Whereas statistics used to be a science that could be "cooked", with the adjustment of its results, and finances were "creative" and capable of producing any fictional product, today, on the back of the availability of the evidence provided by huge amounts of data, the possibilities of virtuality and deception have multiplied. Only

¹⁰ Arthur Lisa (2013) "Big Data Marketing", quoted in Spanish by Andrea Fernández, ABC tecnología (20/11/14), http://www.abc.es/tecnologia/redes/20141102/abci-datos-personas-pies-empresas-201410312203.html.

¹¹ Brobst Stephen, Chief Technical Officer at Teradata, quoted in Spanish by Andrea Fernández, *ABC tecnología* (20/11/14), http://www.abc.es/tecnologia/redes/20141102/abci-datos-personas-pies-empresas-201410312203.html.

Human Intelligence can correct, just as it can ruin everything that has been collected.

3. "Intelligence Units" as a Structural Yardstick in Business and the Basis of Economics in the Future. A Proposed Method for the Management and Evaluation of Intangibles, Predictions and Future

An analysis based on the results of the searches that machines now permit has become a key activity for any modern business strategy. It is useful for everything: understanding markets and customers, identifying new market niches and initiatives, tailoring brands and products, organising society in most of its basic sectors, such as healthcare or traffic, and assisting the elderly and people in general.

It is now inconceivable to think of a business group that is not devoted to the search for innovation in its business sector, to the development of projects, programmes, research, proposals, patented products, and anything else that may make a difference, demarcate its own operating areas, define its guidelines, and respond to expectations and trends; in other words, with a clear ability to be industrially and commercially exploited. The aim is, by converting them into money (cash), to profit from all those potentials to be derived from structured information and knowledge, with this process involving all sectors of the economy, without exception¹².

It is therefore perfectly understandable that this "new" heart of business takes up a large part of the macro and micro frontiers of economic development, and will be a defining factor in the business structure of the future. It may well determine and shape the development of economics over and above any other defining factor, even including finances itself. This tendency defines the future, incubating a phenomenon that goes beyond technology, being linked to the recovery of knowledge and information as a core aspect of development, with the incorporation of knowledge, its management and supply, and to all kinds of tangible products. This was already apparent in patents or in franchises, and from this year on it can be seen in investments in R&D, and little by little it will feature even in the range of mass market products.

The environment and premises referred to so far have informed the activities that our R&D group at the Complutense University has been pursuing for almost a decade now¹³. We have been working on two projects that have ended up merging. One of these projects is called "*Monetizing Intangibles: A reference model for the assessment and valuation of intangible assets to be used in processes involving purchases, mergers, company takeovers, and similar*". The other project involves research into "*Social Neurocommunication or Applications of the results of Neurosciences and Theories on Networks and the Mind to the Social Communication sector and industries*". The convergence has been a logical one: the analyses of HUMAN CONNECTIONS, the SOCIAL NEXUS, and social relationships, analogous to the basic networks of life with which we operate in SOCIAL NEUROCOMMUNICATION, provide a new and different perspective on society, the market, and the economy. We contend that in the everyday operations of businesses and institutions, the space taken up by intangibles follows a path similar to those referring to the creation of opinion, to the shaping of voting options, and to purchasing decisions, whereby the processes of social behaviour are no different to those involving the decisions made in business or on a personal level (Timoteo, 2014).

¹² O'Reilly, Tim (November 2011) "Economía y Ecosistema de Contenidos" at the *FICOD (Feria Internacional de Contenidos*): http://www.ficod.es/ficod/sesion-prenaria/inauguraci-n-ficod-2011-tim-o-reilly-econom-y-ecosistemas-de-contenidos?t=1321971005 533 (retrieved August 2014).

¹³ "ThinkCom" is the trademark of a group researching business structures and tendencies from the perspective of social and organizational communication (www.thinkcom.es).

We therefore posit a whole series of axioms and proposals that are specified forthwith.

3.1 Our First Axiom Is that Information, as the Key Factor in Human Development, in the Efficient Care of Life and in All Aspirations of Human Society, Is Also the Raw Material of Opinion and Decision-making Processes. Everything Is Created in the Data. All Sentiments and Behaviour. So, too, the Economy and Business.

This claim is based both on the investigations made in neurosciences and on the assumptions of network theory and the theory of the mind. The efficient care and management of life is determined by information: even single-cell organisms have the ability to make decisions guided by primitive feelings of pleasure and pain that provide them with information; even unconscious survival processes always depend on information. In more complex organisms, such as human beings, the responsibility for managing life lies with a nerve cell called a neuron that produces electric signals and acts upon other cells. A neuron's management process follows three stages: firstly, it receives information; then it responds (through movement and action); and meanwhile it maps the body itself and the outside; in other words, it organises information, which is knowledge (Damasio, 2010). Information is therefore the cornerstone of life and evolution. Contrary to what we have believed for over a century about basic human instincts (survival through violence or sex), the primary instinct for survival is knowing and managing this survival. Accordingly, activating that instinct to know necessarily has to be the principle informing not only economic activity but all social activity. Yet this key information is inseparable from pleasure (or pain). The mind is interested solely in what produces pleasure or fear. Individuals voluntarily seek knowledge because as part of their biological make-up it produces pleasure (or involuntarily when they are forced to follow the same process driven by pain)¹⁴. Economic activity wraps itself in such primary factors as information and data, pleasure and pain.

3.2 Our Second Axiom Is That the Organisation of Information, That Is, Knowledge, Is Not an Individual or Social Process, But Instead a Collective One.

The concept of "group intelligence" is one that follows on from the theory of "connective intelligence" that Derrick de Kerckhove (Kerckhove, 1997, 1999) has developed for linguistics based on the prior biological concepts of "multiple intelligence" and "distributed intelligence" (which explain the workings of beehives, termite nests, flocks of birds, or carnivore hunting packs). According to Kerckhove, access to information and knowledge is classified into at least several parallel processes or formats: one of these is the *Individual* (e.g., personal study), another is the *Collective* (e.g., a class or a lecture), and a third being the *Connective* (e.g., social networks).

In our research and without extending beyond our scope, we have found a more effective format for the purpose of building opinion and making voting and purchasing decisions, and we refer to it as *Group Intelligence*. This kind of intelligence is not individual, nor is it collective: it normally operates in groups of between 7 and 30 people, being characterised by dialectics, involvement, multiple standpoints, the recognition of emotions, a critical capacity, and argumentation; its tools of choice are verbalisation and oral expression, and reports or products that are the outcome of a collaborative effort. Our selection and preferences stem from past experience in the presentation of news and scoops, in the building of memes and codes of behaviour, and throughout the entire development of the media sector and industry and it is being endorsed by the notions forthcoming almost on a daily basis from different perspectives in science. Here follows some proof:

¹⁴ This is an old Platonic aphorism: "In quippe animus pascitur, unde laetatur" (St. Agustín, *Confessions*, XIII, 27.42); "For on that is the mind fed wherein it is gladdened".

From anthropology, and under the unconfessed influence of Mirror Neurons, Professor Sarah Hrdy propounds that one of the keys to human evolutionary development involves clanship, coining the term "allomothering": the practice of involving grandmothers and relatives in childcare, while the parents seek food or protection; the child-clan relationship developed principles of survival, mental competencies (genetic memory?), which the professor has placed in the cerebral neocortex (Hardy, 2011). From sociobiology, Edward Wilson propounds group cooperation (which he defines as "eusociality"), as the differentiating aspect between the evolution of humans and apes: defending the clan against danger and a group hunting strategy forced the appearance of group structures, with the differentiation of roles and the division of labour in human clans (Wilson, 2013). In direct and radical support of our theory, the science philosopher Kim Sterelny maintains that "group knowledge" (within the clan or family), upheld by innate cognitive mechanisms, was an assurance of modular learning (by sectors: health, diet, hygiene, clothing, organisation...) that enabled adapting to the harsh conditions of the remote Pleistocene; only "group" learning rendered it possible to quickly grasp the skills and intentions of other clan members, of the "group", as the only way of organising a collective response in pursuit of a shared end, such as defending against immediate danger, hunting, or modes of organisation (Sterelny, 2012) This "group knowledge" cannot be acquired or established over the course of a single generation, but instead needs to be transmitted and extended over centuries, and encapsulated over time in formulas that constitute the principles of what we now consider to be civilisation.

3.3 Our Third Axiom Is That the Prevailing Factor in the "Value Chain" of Processes for Moulding Opinion and Decisions Is the Goal, the Set Target, the Final Value, Which Transferred to the Institutional or Business World Means Relating and Interfacing with the End User.

This axiom is clearly explained by Damasio in his most important publication, as already mentioned (Damasio, 2010). This is becoming increasingly apparent in the behaviour of organisations in today's changing market, where their development strategies necessarily have to adapt to the market and to its evolution. The most interesting techniques for dealing with consumer decisions have already divided the market basically into three major segments: the Western market is still largely a "Non-Digital" arena with behaviours that respond to last century's models, in which ideology, brand or traditional factors such as class, income, sex, education, etc., have a decisive role to play in purchasing and voting choices. The growing and future market of "Digital Natives" (defined as those under the age of 25), who comprise the colony of "Digital Settlers"; and an intermediate market of "Digital Immigrants", who are somewhere between the first non-digital segment that is waning and the second one that is waxing, although they have still not altered the basic sources of credibility; they surf the net but continue to watch the nine o'clock news.

There is no need to be an expert to see that the non-digital market is rapidly shrinking, and that the other two (digital natives and digital immigrants) tend to take up all the space in that huge cauldron of the market. In our experience of day-to-day consumerism, which is extremely well-versed in dealings with "**digital natives**", operating rules and regulations have already been established regarding the behaviour of the "digital settler", who responds to the profile we have been describing here, and largely takes part in group decision-making processes.

The first involves the search for useful information: before buying, people compare the product or service and find out more about it; when going to the doctor's or the bank, booking a flight or a holiday, leapfrogging the middlemen and agents, albeit within a decision-making circle that is fairly specific and reduced. The second involves the position within the decision-making and purchasing process: it is a "pull" position, whereby users drive the promotion and advertising of whatever they choose or select; they do so in a multi-channel format that is not so much related to the brand as to the position of the chosen item in search engines-its positioning ("sharability"). The third one directly involves group intelligence. The decision does not look for a product, but instead "stories", narratives: when buying Adidas, one is not buying trainers but rather one is buying into the notion that "Impossible is Nothing". The selection of these stories, of the narrative, is undoubtedly pre-determined by the group, the individual's position within their reduced environment. Hence, given the security of belonging to a group, the selective decision includes co-creation, the building of market spheres in collaboration — networking — with the other participants in the network's points of convergence. This very reason informs the need to act with implicit rules of commitment and of respect for experience.

Nobody doubts either that these behaviours will move around in the network on a personal interface of mobile screen-consumer, and that this digital mobile interface will provide the setting for the consumer decisions of digital natives and a growing number of digital settlers, who will soon account for 50% of the market. When the majority of consumers spend an average of 12 hours per day interacting with a screen (mobile device), direct relationships, without intermediation, will have ended in the domain of mass media, and their intermediating value for major "targets" will have been swept away.

3.4 The Fourth Axiom Is that GROUP PROCESSES Develop as "Choral Intelligence Units". Life and Intelligence Only Appear Where There Are Interconnections, and so only "Chorality" Leads to Innovation, the Ability to Develop, Competitiveness, Efficacy and Results.

This claim concentrates the conclusions from the three previous ones and leads us to the heart of our proposal. We contend that in terms of methodology one may restructure economic organisations based on what we define here as "Intelligence Units" or "Knowledge Units", as opposed to the common structure based on "Business Units". Furthermore, these reference units will also permit the establishment of a method for auditing, valuing and monetising intangible activity in a much more efficient, straightforward and radical way than all the other models proposed up until now.

Corporations obviously need to perform well. The results of their performance, audited and assessed in their financial statements, show that their efficacy arises from their productive systems and value chain. With a view to ensuring the effectiveness of this value chain, firms tend to structure themselves into operating units or <u>Business</u> <u>Units</u>. In order to meet their targets and develop, these units have generated innovation, niche products, tendencies; in other words, intelligence products, and as necessary by-products, instruments, software, tools and knowledge. This means that the creative process is now essential to the success of a "Business Unit" and the firm as a whole. This may not have been the case fifty years ago, but it is now absolutely crucial. We may define these "spiritual" efforts and operations that generate innovation and niches as "Intelligence Units".

Let us consider, for example, a petroleum company. It has a Business Unit called "Bitumen". It faces tough competition in the sale of highly standardised products. What can the "Bitumen" unit do to consolidate customers or open up new markets? A standard short-term strategy involves lowering prices, but it does not lead very far. Another standard strategy, the winning one, is to provide innovations, improvements in products, new components...for example, this last item may involve a luminous asphalt that can absorb sunlight during the day and then light up at night. Innovation, adjustment, and improvements are always the outcomes of research: someone dedicates information, knowledge and intelligence to discovering something new. This is what saves the business. Solely knowledge and choral knowledge, the "intelligence unit" alone, embedded within the heart of the "Business Unit", can save the business.

The creative process is and has always been definitive. The market, financial results (the business) is the

measure of knowledge (tools, products, and services). Although the end by-products (products or tools) are tangibles, they will always be, therefore, the outcome and measure of intelligence (innovation and research) and knowledge.

The creative process is and always will be an integrating one. It is horizontal, not institutionalised. It has broken with the traditional differences between "internal" and "external" in favour of connected and global approaches. For the "inner spirit", the soul of an organisation (its reputation, prestige, credibility, and market share) and its correlative innovative capability always stem from and feed off the outside: internal means creating the external (once again a substantiated affirmation by Damasio on the evolution of life and humanity).

Above all, we posit that the creative process is a group endeavour; a predominantly group affair. Joshua Wolf Shenk provides a fascinating description of how Paul McCartney and John Lennon created music together (Shenk, 2014). Shenk uses this story to reflect upon the myth of the solitary genius, and reaches the conclusion that there is no such thing. The reason is that creativity always arises from juxtaposition (we prefer to call it <u>connection</u>); often between people. It might occur between contrasts and contradictions when it involves an expression made by a single person. Shenk provides several examples of this latter case: in Hamlet, Shakespeare juxtaposed the code of honour of the ancient Greeks ("thou shall avenge thy father's death") with the Christian code of compassion ("thou shall not kill"). He concludes by affirming that despite today's disenchantment, innovation continues to be alive in juxtaposition, quoting Einstein: "No problem can be solved from the same level of consciousness that created it".

If we are to believe the mass media, innovation involves solely pharmaceutical formulas, solar panels, and social networks¹⁵. Yet this is not in fact the case, as according to the line of reasoning we have just expounded, any sector, any activity, tends toward innovation, creation, and the future. It is its principle of survival. Governments normally use public money to fund research that is strategically focused on their country's development. And so they should (Mazzucato, 2013). Yet each item of furniture at Ikea contains details of absolute intelligence: reducing the weight of bookcases, adjusting the bolts on metal shelving...; the humble pizza is another typical example, with thousands of developments adapted to the tastes of each location; another classical example involves the simple pencil: Leonard Read maintains, consistently with Hayek's thesis, "Actually, millions of human beings have had a hand in my [the pencil's] creation, no one of whom even knows more than a very few of the others"¹⁶, and as human beings like novelty, invention and discoveries, the story of a pencil covers all aspects of the market and an innovative economy. An even more classical case involves the "pig economy", referring to the animal of which every part can be used and with an inimitable ability to turn its less attractive parts into a tasty morsel¹⁷.

The easiest part of an innovative process involves big ideas. What is really difficult is having a good idea actually put into practice: coming up with a new business, reducing costs, cornering and maintaining a market share, developing small innovations that improve or perfect already existing products and services, all this constitutes the innovative process (Berg, 2013).

¹⁵ On a yearly basis, the magazine *Fast Company* publishes a list of what it considers to be the world's most innovative companies. Only one of the top ten does not belong to the digital sector, namely, "Life Tech", a genetic engineering firm. The same applies to the lists systematically published by other magazines, such as *Forbes* or *Business Week*.

¹⁶ Read L. (1959), "I, Pencil: My Family Tree as told to Leonard E. Read" published in *The Freeman*. Widely reproduced, e.g., at http://www.econlib.org/library/Essays/rdPncl.html.

¹⁷ Meindertsma Ch. (2014), *Pig 05049*, Idea Books, Amazon.com, 5th edition. It contains 185 products provided by a single pig: all the parts of the pig are dissected, prepared and sold separately depending on the locations and the markets.

This effect is preferentially achieved with "Intelligence Units". Through its knowledge-generating role, its responsibility in the creation of new business niches, its capacity for competitive positioning, its scope for hauling the business into the future and ensuring its survival, an Intelligence Unit is the heart of the <u>Business Unit</u>. The <u>new heart of business</u>.

"Intelligence Units" have three parts to play. One refers to the Valuation and Booking of Intangible Assets, and therefore to the book value of corporations. Another involves the channelling and methodology of R&D investments, and the amortisation and recovery of those investments. The third is the key factor involving the likely reorganisation of firms and the economic structure of the future.

As regards the Valuation of Intangible Assets, we propose a methodology in parallel to the valuation used in human resources or in the assessment of administrative tasks, and as a complement to standard reputational and financial methods. There is a quasi-secular valuation of human resources, logistics, commodities, instruments or tools, or the materials required in the projection of a business and industrial activity. The methodology may vary in each parameter: there is a difference between the way an assessment and human resources are valued, or in the purchase of a machine, although there is more than enough experience in all cases. Our proposal is to consider the Intelligence Unit, a factor in the Business Unit, as yet another component, and measure its value by copying the formats of finances and human resources, above all, incorporating the results as a decisive feature. The value of this activity — Intelligence Unit — may be measured through results, the hours dedicated (as in HR), the investment, the by-products....through the formulas always used in standard accounting practices.

Regarding the amortisation of the amount budgeted for research, the principles are already laid down in the recent decisions of the European Union and the US Administration. What are missing are the "regulations", the decision-making experience of the monetary authorities and the corresponding ministries (tax and fiscal inspection), but the process will continue unchecked¹⁸.

The growing weight of Intelligence Units will have a bearing on an Organisation's overall structure and, in sum, the economic structure of the future is simply a matter of time.

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¹⁸ See ESA 2010, "European System of Accounts 2010", June 2014.

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