visionomics

50 ideas and illustrations on the new dynamic of organisations

Text & original illustrations
Alfons Cornella / *Founder of Infonomia*

Ideas
x
Value
=
Results

50 ideas and illustrations on the new dynamic of organisations

Illustrations adapted by
Edmon de Haro

libros infonomia

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For my children: because they still have everything ahead of them; they are just at the beginning.

For my parents: because I never thanked them for everything.

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introduction

Infonomia is 10 years old in 2010; 15, if we go back to the August day in 1995 when I started to write the blog *avant la lettre* for *Extra!-net*. Since then I've learned a lot, basically because I've written a lot: if there's one thing I owe to the effort of all those years, it's discovering how much I can learn from writing. In fact, if we include those in this book, I've written an uninterrupted series of 1000 articles since 1995.

The last 10 years have been difficult, with both good and bad (and some very bad) times. I began the decade with the book *Infonomia* (2000), which encapsulates the philosophy behind the project Infonomia.com. During those 10 years numerous events have occurred, but the common factor has been the continuous effort to reinvent ourselves in the face of changing circumstances: the dotcom *crash* (only a few weeks after we launched the business), the *shock* of 9/11, and now the socio-economic crisis in which we find ourselves swimming. And what's more, swimming constantly against the current.

Our success owes much to the *visionaries* who gave their financial support at the beginning of the project (my partners), to a unique team (the combined talent of 50 people over the years), to over 100 *forward-thinking* clients who were prepared to take a risk and from whom we have learned a great deal, expert providers, and more than 22,000 *inspired* professionals who have contributed to our network, helping to make it the *de facto* reference network on innovation in Spanish.

I would also like to mention all those who have *impeded* our development by putting obstacles in our path. My thanks to you for filling me with even more determination to strike out against the current...

And now here we are. At a truly fantastic moment. Living through this unique time. How often in history has it been possible to experience firsthand (alone or in company) such profound change in the socio-economic structure? Because that is exactly what is happening now: an era of exciting uncertainty. An uncertainty that, at times, might seem overpowering, but that has oiled the wheels of progress to ensure the ongoing creation of value in our society. Somebody once said that uncertainty is the price of freedom. And it was Schumpeter who declared that the concept of stable capitalism is a contradiction in terms (capitalism has never been stable) and that the fundamental mechanism of the economy is *creative destruction*, with the fantastic accumulation of vital energy led by the entrepreneur.

Our times are characterised by the acceleration of change, benefiting from technology that fuels itself: better technology facilitates the development of better technology, and so on. Times of disruption, with whole industries falling into crisis: music, the media, tourism, commerce, and soon, as I understand it, other apparently more stable industries: banks, education and universities. If we allow ourselves to get carried away, we could declare that all economic sectors, and their conventional business models, will go into crisis. Technology radically transforms how we do what we do, and helps us to do what we haven't yet done. It transforms the how, what, where, when, how much, and even the why. One thing I've ascertained in my 25 years as a professional is the continuous acceleration of technology's impact on the destruction of business models, in practically all areas of the economy.

On top of all this new areas of the world have surfaced like volcanic eruptions (almost always produced, curiously, in geographically *hot* regions), from the bottom of the economy, from the small print of the statistics on progress and social development; gaining irreversible significance in the distribution of global markets. Entire areas such

as those in Asia have already proved this; Brazil is on the brink of forcing its way into the system, followed by the rest of Latin America. Africa is waiting to take off. Other areas will have no choice but to reinvent themselves, Europe in particular.

The opportunity of living in these truly unique times ought to inspire a strong sense of *intelligent optimism*. It's not just that optimism is the only antidote to the crisis, but that we are now in a unique position: millions of people are ready to exploit the world's technological heritage by combining individual and collective intelligence. In fact, if we face one critical challenge in the next few years, it is to increase our knowledge and abilities to solve the greatest problems of the world (the planet) and humanity (society).

Knowing how to save social networks from becoming no more than an instrument for (frivolous) contact between people and developing their full potential as tools to transform the world will be our greatest challenge as a society in the next 10 years (the next Infonomia decade).

But let's be clear about this. The foundations of this intelligent optimism would be very unstable if they consisted of no more than technology (instruments). Its real strength is rooted in the fervent human pursuit of understanding. A system that has been built on mass production and consumerism (accompanied by the extreme debt of peoples, businesses and states) should be followed by a system modelled on the resolution of the world's problems (its people), with respect to the planet (the *context*, par excellence), and which deals with the needs of its citizens.

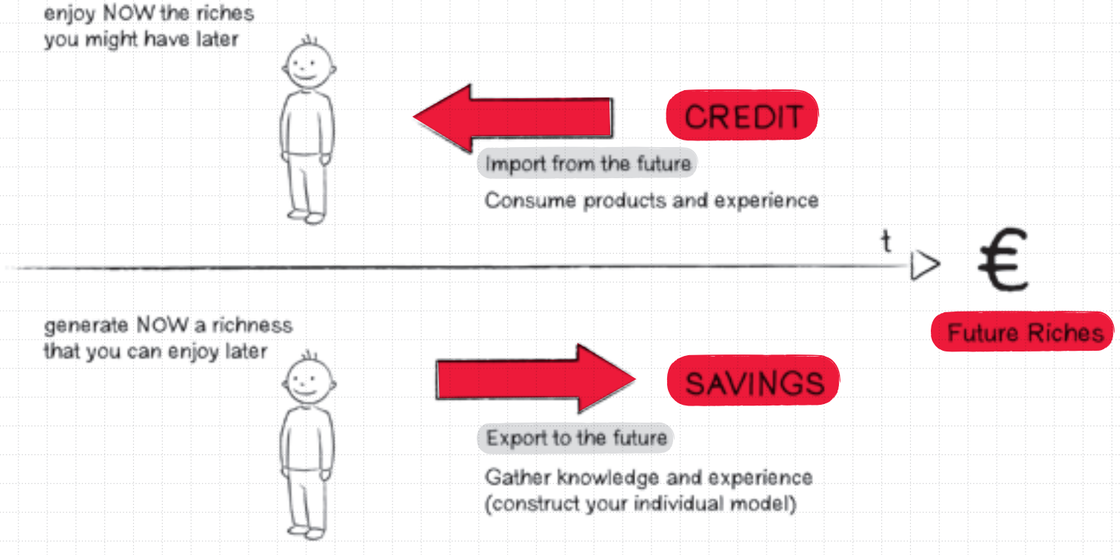
This could be achieved, in one way, by creating a mental state in which human identity is tied to the wish for common progress and not the individual satisfaction of an agenda shaped by greed. In this sense, social entrepreneurs are an interesting evolution of the (extreme) capitalism that now appears to be dying out. We should travel light, apply common sense, and understand that a business is a project and not merely a money-making machine.

The mental state of a society is what drives its well-being. And, to be honest, I think that we ought now to be able to create a mental state that is identified by the wish for a better future, for everybody: an identity based on the construction of the future, not on the greedy exploitation of the resources of the past.

All this is yet to be done, and somebody must do it: us! We have no choice; it is quite simply our responsibility. That's why you are one of us – somebody who is ready to act.

I have tried to let this intelligent optimism guide me during the last 15 years. I have tried not to complain about the difficulties. But I haven't always been successful, as those closest to me know. I ask their forgiveness. Especially from my family, who have suffered (too much) my sometimes unreasonable (if not unreasoned) dedication to the project.

And I ask forgiveness from those who I have accused, maybe unfairly, of not understanding the transformative potential of the project, and those from whom I have required support they considered undeserved. I have failed in not making our objectives and our reasons sufficiently obvious: to use ideas, experience, and connections to inspire the country's most progressive minds, to stimulate change towards a model of value creation based on ideas, beyond the short-term gains of apparently golden opportunities (perfectly exemplified



^ *Construct an identity based on progress: export to the future.*

by the property boom, the resilient but vain model of *intensive* tourism, or the illusion of purely speculative digital commerce).
I would like to see this book (the 17th I've written) as the culmination of the Infonomia project. In it I have synthesised some of the original ideas that I have developed as a consequence of reading many books, meeting many people, and dedicating a lot of time to rearranging these into a form that I hope will be useful for the development of new business opportunities. It is a *refined* synopsis of what we have learned about the direction of organisations. And, to make it more practical, I've used a format that I find enjoyable: illustrations and brief comments. This is a visual book, which I believe has something new to say. Perhaps not something that can be applied straight away, but which I hope will be confirmed as a substratum of mainstream economic and social currents during the next 10 years (the next cycle of our project). Some of them are bold ideas, but… when the time is right.

Some of the articles are the result of *fusing* ideas from very diverse sources, in a game of hybridisation that readers will know I am something of an addict. Dozens of articles and books, of which some stand out: Edward Tufte's fabulous books on the visualisation of information, the *anti-infoxication* manuals of Richard Saul Wurman, the biographies of inspired minds like Schumpeter, Franklin, Edison and Darwin (and Harold Evans' book *They Made America* is fantastic!), Jared Diamond's penetrating vision of progress, Michael Porter and Clayton Christensen's *instruments of thought*, the summary of management in Joan Magretta's *What management is,* the mad ideas on society from the imagination of Rolf Jensen, Hiroshi Tasaka's tools for *glimpsing* the future, Peter Watson's history of ideas, *From fire to Freud* (the book I'd recommend if I could only choose one), the description of the borders of physics by Brian Greene (writer of the series *The Elegant Universe*), and the article *Manage Yourself* by Peter Drucker (1999), that made me understand that the most fundamental thing in life is to determine how you learn, and to be consistent in it. That where I invented my motto, "I unlearn, therefore I am".
To finish, I must thank all those who have made this learning possible. The professionals who have worked over these 10 years as team members *at* Infonomia: David Alcubierre Arenillas, Desirée Andújar Read, Marta Aubia Rumbau, M. Engracia Barbero Sánchez, Marina Barceló Chine, Enric Bayó Molina, Ana Bellés Navarro, José Antonio Céspedes Hernández, Maura Claramunt Altimira, Eva Coll Fulquet, Marc Compte Braquets, Jason Davis Ball, Marta de Juana Martínez, Edmon de Haro Monés, Raquel Díaz Claramunt, Gema Franco Manzano, Mercè Gamell Andreu, Ladislao Girona Flores, Beatriz González Sigüenza, Mercè Guillén Solà, Bernat Guitart Grima, Valentí Llagostera Español, Abigail López Adrover, Carla Lorenzini Gavilan, Rosanna Marotta, Mireia Márquez Pascual, Àlex Mezquita Garcia-Granero, Laura Miñano Gili, Núria Molas Pratdesaba, M. José Monto Cervera, Marta Pastor Boj, Sílvia Pérez Adell, Alicia Pérez Suárez, Daniel Plana Trenchs, Esther Plaza Massó, Aurora Portillo Calvo, Laura Pradal Cano, Mònica Prats Castillo, Dolça Puig Garriga, Pau Roig Cava, Laura Rosas González, M. Mar Ruiz Solanes, Fina Sala Oliveras, Josep Lluís Sánchez Brugarola, Mariona Sanfeliu Salvà, Laia Sanjuan Plaza, Maria Santolaria Barba, M. José Seculi Portabella, Alfonso Segura Planas, Annika Solf, Natàlia Teira González, Sílvia Tejero Arroyo, Aure Valentín Solari, and Ingrid Vega Jiménez.

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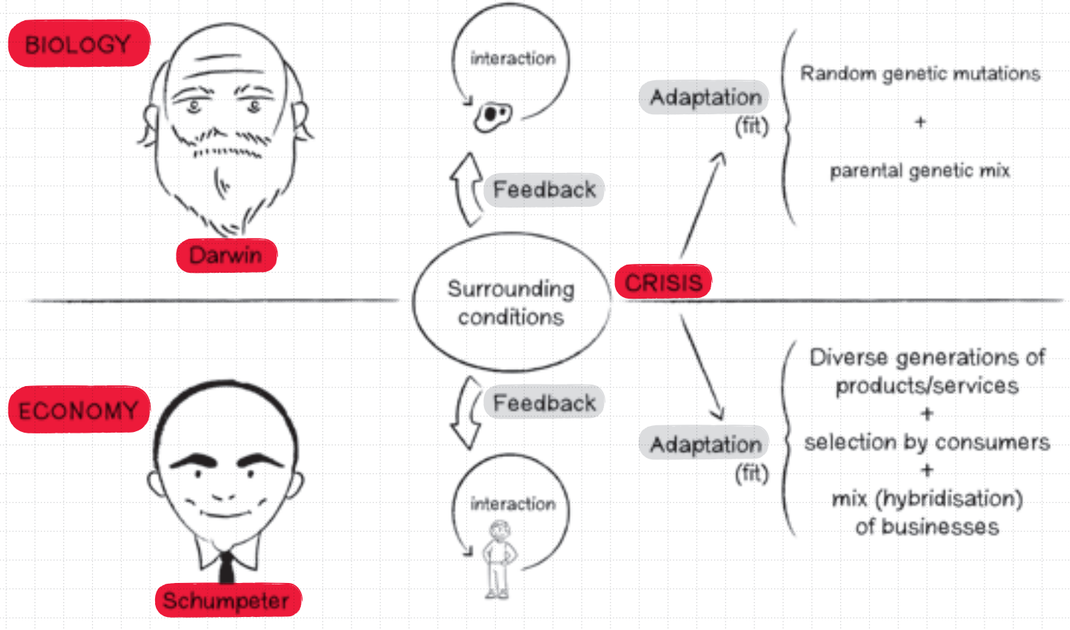

^ *Darwin and Schumpeter meet: adaptation for progression.*

Mateu, Enrique Dans, Cristina Díez Ochoa, Susana Domingo i Pérez, Ana Domingo Tomás, Marion Dönneweg, Marta Estévez, Roc Fages Famió, Víctor Farré Ballarín, Antoni Flores, Patricia Franco, Jordi Gamundi Ballbé, Miguel García-Gosalvez, Karina Ibarra, Victoriano Izquierdo, Irene Lago Bermudo, Sílvia Langa Bellatriu, José Ignacio Latorre, Marc Lite, Fernando López Mompó, Andrés López Rodríguez, Àgata Losantos, Gerard Marcet, Lucio Margulis, Òscar Mas Gran, Jordi Nadal, Nuria Nieto, Doris Obermair, Kim A. Page, Joan Carles Piñeiro Font, Néstor Postigo Sevilla, Montserrat Pous i Sabadí, Alberto Pradas Salillas, Teresa Turiera-Puigbó Bergada, Arnau Queralt i Bassa, David Ramon, Roberto Reyes Miramón, Genís Roca Verard, Juan Carlos Rodríguez Sanz, Sergi Rucabado, Núria Sala Serra, Carles Salas Sánchez, Daniel Sala Teruel, Roser Salvat Jofresa, Enric Sanabre Hidalgo, Joan-Anton Sánchez de Juan, María Sanz Navarro, Bernat Sàrrias Torras, Petz Scholtus, Marc Segarra Torres, Berta Segura Agulló, Eva Serra Sánchez, Beatriz Silva Gallardo, Anna Solana Duch, Pilar Soldevila García, Andrés Suñé Busquets, Pep Torres, Sergio Vásquez, Javier Velilla Giménez, Marc Vidal i Juanola, Gregory Yacoub Oushair.

My thanks, also, to the more than 1,000 organisations documented in our insatiable search for innovators. And to the more than 5,000 people that I have met on my journey.

In keeping with our claims, Infonomia must now reinvent itself, from the knowledge that we have done our work well; from our relentless passion for learning. But with new instruments and new horizons, on which the English language will take centre stage, to unite us irrevocably with the global revolution of which we want to be part. Somebody said to me not long ago (thank you, Jaume!) that in Spain it didn't fail, it was just abandoned too soon. Subtle, but true. I believe he is right, and that's why we will adapt to the new realities, using ways to influence society and the economy that are most appropriate to our *genetic defect* of always being just a few steps behind. We will try to play our part in encouraging stalling businesses to step harder and more decisively on the accelerator. We want to contribute to the re-writing of the present, with one foot firmly in the future.

When I began the Infonomia project, 10 years ago, somebody gave me the gift of a question that has remained with me through everything. He asked me if this project "would make us rich". I answered immediately, from my guts, without thinking: "rich in what?" That response stopped him joining a business venture that he would never have understood. I understood that the objective of a company is to make an idea possible, to convert it into an economically viable project that will have an impact on society. Now, 10 years down the line, the reinvention of Infonomia is directed towards helping the most intelligent teams in Spain's top companies become more intelligent still (*from smart to smartest*).

This book contains 50 ideas to start to do that. I hope you enjoy it.

And thank you again!

Alfons Cornella
Founder, Infonomia
November 2009

(This introduction was written during a work trip in Lima, Peru, under the powerful influence of the music of George Gershwin).

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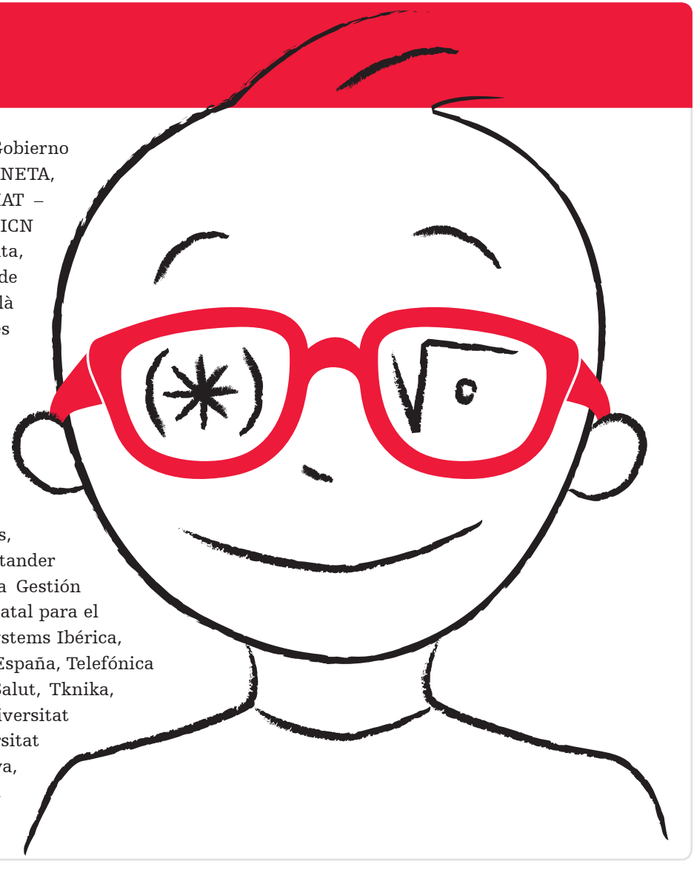
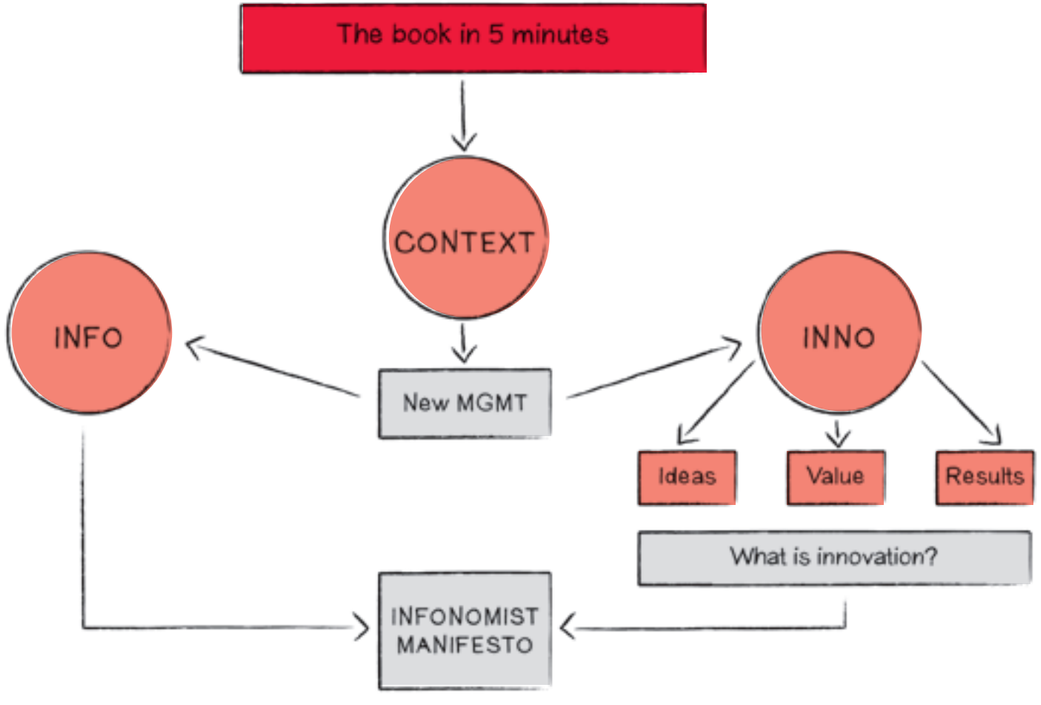




CONTEXT

Middleground
imagination x infrastructure
imitation vs intelligence

INFO

paradox *i/t – t/i*
exhaustive x relevant
smart everything

economy
x
culture
=
society

INNO

ideas x value = results
DOC intersection
efficiency x difference

NEW MANAGEMENT

wicked problems
K x S
invisible second hand

1. S = e x c

A society in progress is made up of a combination of economy and culture. With the multiplication of infrastructure (systems) by infostructures (knowledge). And this is a multiplicative equation: if one of the multipliers is zero, the resulting total is zero. So, for example, it's no good putting computers in schools (*infra*) unless the teachers are taught new educational models (*info*). An organisation's technology is worth nothing without people who know how to use it to achieve the strategic objectives of that organisation.

2. K x S

Today's economy should be based on a combination of the best of Keynes (K) and the best of Schumpeter (S). Combining the strength of the state to create work in the short term through stimulating the economy, and guaranteeing equal opportunities, with the creative force of the entrepreneurs who drive the economy by *creative destruction* (where existing organisations, no longer successful in the current climate, are overtaken by new businesses that destroy them).

3. P = output/input

Productivity is the fundamental economic variable for maintaining citizens' standard of living; it is the relationship between *output* (what is produced) and *input* (what is used to produce it). One of the objectives of any organisation, and for the economy of a country as a whole, must be to increase productivity (more efficient exploitation of available resources to create better value for its citizens). In effect, in order to increase productivity, we can reduce the denominator by exploiting the available resources more efficiently, or we can increase the numerator by deriving more value for the consumer. Technology allows us both to optimise the use of resources, and to increase the value of products.

4. i x V = R

Innovation consists of forming ideas that somebody can turn into a product of value for a client, which then generates sustainable results for the organisation that makes it. Ideas with value equals results. From an innovation perspective, ideas that are not analysed according to their *value for somebody* are not worth producing. And producing value for a client without being able to sustain the results will not maintain the organisation in the long term. This equation can be seen as a three-stroke engine, working constantly: ideas give value, which produces results, which finance the production of new ideas to give new value…

5. DOC

The organisations that innovate best do so with multidisciplinary teams of professionals from three different fields: design (producing ideas), operations (producing products and services for benefit), and client relations (understanding what clients want and need, and providing an adequate service accordingly).

6. i/t versus t/i

The great paradox of the information age is that while technology gives us a higher and higher *bandwidth* (information received per unit of time), our brain has a limited attention span (how much time we can dedicate to each piece of information). This is an intrinsic problem in our system of understanding the world, which is crying out for solutions to improve our physical ability (increase our attention span), or to improve the way information is processed, making it more spontaneous and more quickly digested.

7. From G to F

The last decade has been dominated by the concept of search, represented by Google (G): all information in the world that can be digitised is being digitised. But not all knowledge can be made explicit – converted into some sort of document which can then be digitised. A large part of what the human race knows is stored as experience, in our brains. This tacit knowledge, which cannot be made explicit, can only be transferred through direct communication between humans. Social networks, like *Facebook* (F), could end up having a very important role in the transmission of tacit knowledge from person to person, and that would represent a historic leap in the management of knowledge.

8. e, i, o, u, s

We have spent two decades putting the letter *e* in front of everything: *email, e-commerce, e-learning, e-banking*, *e-everything*. And following the digitisation of the world's information came the ideation of tools to enjoy it, intuitive interfaces for its utilisation like the iPod and the iPhone. All this thanks to a model of technological development based on *open* (*o*) standards. Next is the personalisation of services (*u* = you), using sophisticated digitised systems that surpass the standardised services of the first wave (*e*). And soon we will come to the age of *s* (*s-commerce, s-learning, s-banking*): intelligent use of available information (*s* = *smart*). Machines that interpret data and act on it. People who share their knowledge to compile a collective intelligence.

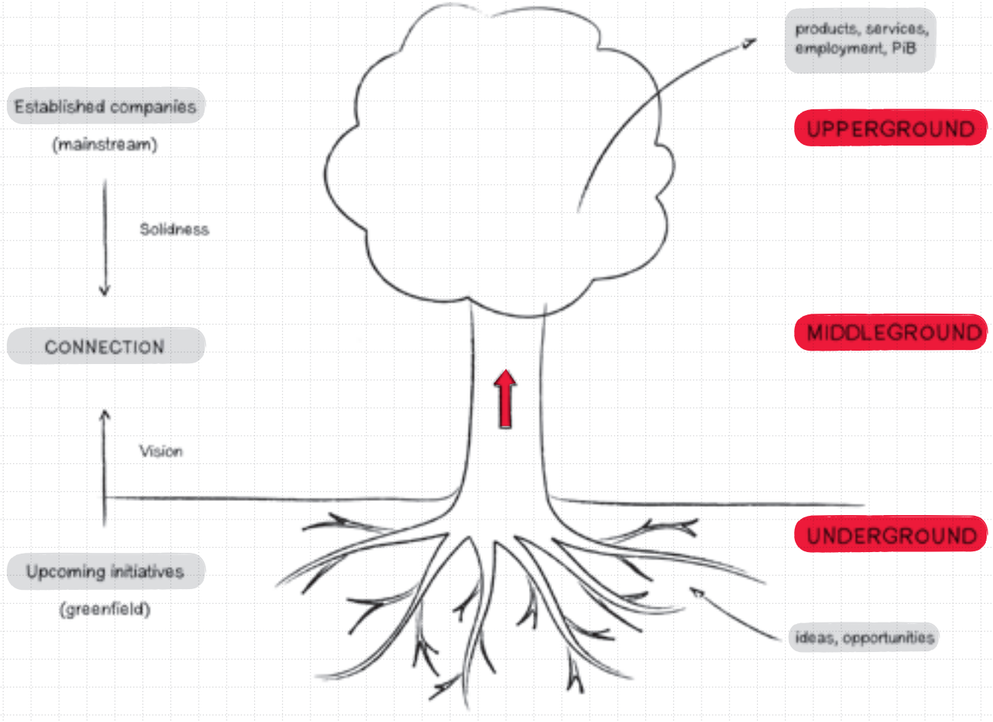
9. Wicked

The problems that will arise are more complex, not only because they are more difficult to resolve, but because they are more difficult to define. These are *perverse*, or *wicked*, problems. They cannot be resolved with algorithms, but by the deduction of more or less practical rules (heuristics). This method is by trial and error, and compromise. The resolution of perverse problems requires the collaboration of groups of people whose interests tend to *break down* the problems by moving away from their focus. There is no resolution for a perverse problem without the ability to see it through a shared vision and an agreement on the best way to approach it.

10. Middleground

In every society the well-established organisations (the *upperground*) coexist with upcoming organisations (the *underground*). A modern economy requires a connection between the two: the vision of the new combined with the solidness of the matured. But these two *poles* of the economic system do not connect easily. The correct conditions and tools need to be established so the *upperground* and *underground* can connect and develop joint projects. This is the function of the *middleground*. Infonomia is a perfect example of a *middleground* project.

context



For society to maintain its level of well-being and progress, it must join its talent with its resources, and its dreams. It must break the paradox that has been persistent throughout history, summed up by Alfred Whitehead: "Those who have money have no ideas and those who have ideas have no money".

It makes sense to connect these two economic *poles* of society: the solid, established companies (the *upperground*), and the weaker, upcoming initiatives (the *underground*). The established companies are like the leaves of a tree, which generate oxygen for society (the creation of riches). The upcoming initiatives are like its roots, searching constantly for new nourishment to give them *life*.

The established companies are economically and financially solid, and above all, have good knowledge and experience of management and the workings of the markets. The new companies have audacity and vision, and the passion of entrepreneurs, plus a certain amount of motivation and *positive bravado* that generally no longer exists in the established organisations. The established companies have their confirmed routes (positive aspect) but are over cautious with their brakes (negative aspect); whereas the upcoming companies are keen to advance (positive aspect) but have little power for acceleration (negative aspect).

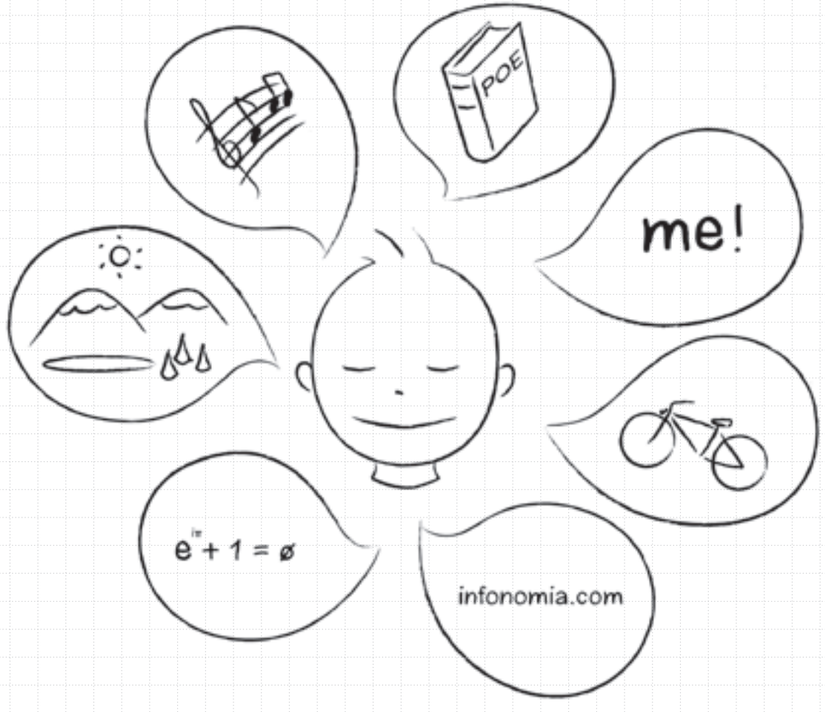
A society has other examples of *upper* and *under*: the nationals of a country and the expatriates who live there (a curious euphemism to describe emigrants who carry a postdoctorate qualification). *Hard* industry and *soft* services. Supply and demand. The *normal* (*mainstream*), and the *different* (*greenfield*). The *establishment* and the challengers. Quite simply, the old and the new. The company (past) and the school (future). Business and research groups in a university, etc.

Future organisations (and society) will need new tools, new "institutions" (see Hayek), new social mechanisms, which connect the *upperground* with the *underground*. Something which we might call *middleground*. Connecting mechanisms that will allow *upper* and *under* to meet and begin a dialogue, to develop new projects together to which each can bring its best qualities.

In the tree metaphor in the drawing, a tree with abundant leaves and strong roots is nothing without a trunk to connect them. The new nutrients that are constantly absorbed by the roots need to reach the higher branches so that the leaves that allow the tree to breathe can form. Without a trunk, there's no tree. Without a *middleground* there'll be no progress. This is something that perhaps wasn't necessary a few decades ago, but is now imperative in an age marked by short life cycles, the increased speed of ideas-to-value conversion, and innovation as a fundamental mechanism of an organisation's survival.

For 10 years, Infonomia has had the vocation to function as the *middleground* between Spain's established businesses and its upcoming ideas and companies.

Towards transversal nations



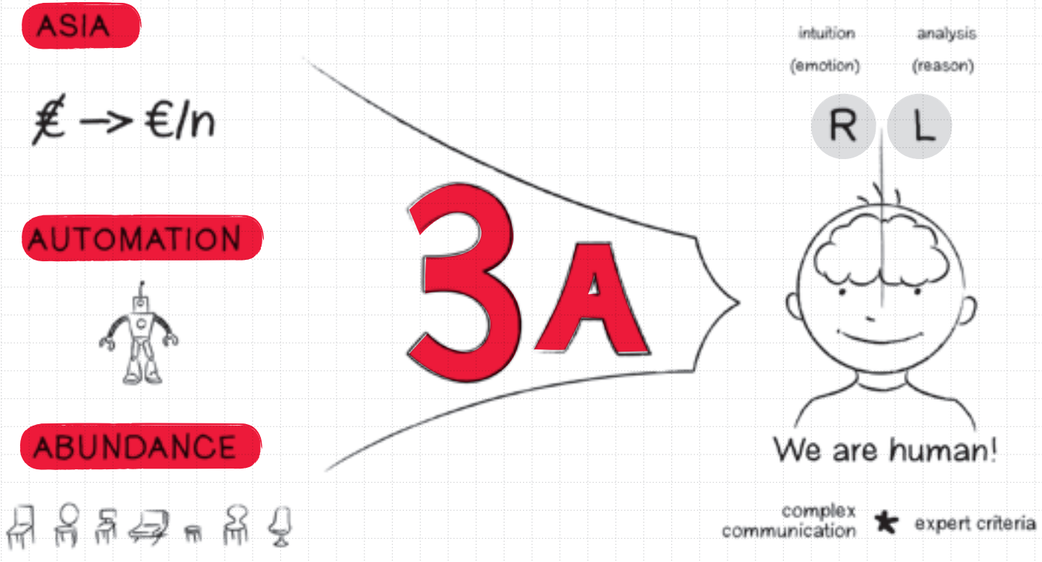
A few years ago I surprised a colleague from the US with an apparently trivial question, "Where are you from?" She looked at me, "What do you mean?" she asked. "Where was I born? Where did I go to school? Where do my parents live? Where do I live now? Where do I feel like I belong? Where would I like to belong?" The string of answers she gave me made a net all over the globe, because her father was a diplomat who had passed through half the world's embassies.

Citizens are citizens of different *countries* and *mental continents*. The most *advanced* citizens (interpret the term as you will) are not from one place only. They have multiple labels (*tags*) to characterise them, from different *tribal origins*. Some labels are idiomatic, some are scientific; some related to inclination, others to aspiration. When, from all the possible zones, I stand in one that corresponds to a particular label, I feel a part of it and act as its citizen.

At this very moment new countries are being built in the world, some even without a physical territory. The Swedes who write *Funky Business* smilingly warned us of the numeric importance of what they called the "Independent Republic of Britney Spears", made up of all her fans worldwide (who, by the way, add up to more than the population of Belgium). And isn't this what is happening with the large corporations? Where is IBM from? Or Shell? Or Dell? Ok, they still have headquarters, from which they pay taxes, but where are their members from? Rolf Jensen warned us in *The Dream Society* that in the near future a few citizens from advanced countries could easily decide to create a better society and buy a part of the Sahara desert and, using the latest technology, create a 3.0 society superior to the Western society we know today. And isn't this what is already happening in some small Arabic countries like Dubai or Abu Dhabi? Doesn't the appeal that these countries have to Western talent, with the aim of becoming the *halfway* point (geographical and temporal) between East and West, and with their financial and audiovisual *hubs* (two where the sun never sets), show an advance towards Jenson's prediction?

We are heading for a *horizontal* world. One where communities are formed of interests and tribes. Music fans who get together every year in Barcelona for the Sonar festival. Independent cinema fans making pilgrimages to Sundance. Universal football clubs. European projects that promote relations between companies throughout the continent. We feel more comfortable with others who understand us than we do with people from the same place as us. I have my multiple labels, from my multiple interests and possibilities, and I might appear in a thousand Google search results made by people searching for very different things. It might be that right now there are people in the world who are entering me in their own world of interests, having found me on the Internet and decided that I should be part of their project (I am thought up by others, a bit like Borges). The world is miscellaneous, suggested David Weinberger. It does not have just one, but many silmultaneous faces.

The challenge of triple A



In his book, *A Whole New Mind*, Daniel Pink[1] tells us that the survival of a business depends today on its ability to do something that a (cheaper) workforce in another country cannot do, that computers cannot do faster, and that satisfies the need for transcendence in an age marked (in the developed world) by abundance (excess). Pink has named three *demons*, the "triple A": Asia, automation, and abundance. So, in a *market of excess*, we need to propose emotion, attitude, meaning, transcendence, style, more than mere efficiency. The practically inexistent cost of communication means that today we can work with companies in any part of the world. And machines have advanced so much (remember Deep Blue's triumph over Kasparov) that the question we really need to be asking is whether they will end up dispensing with us.

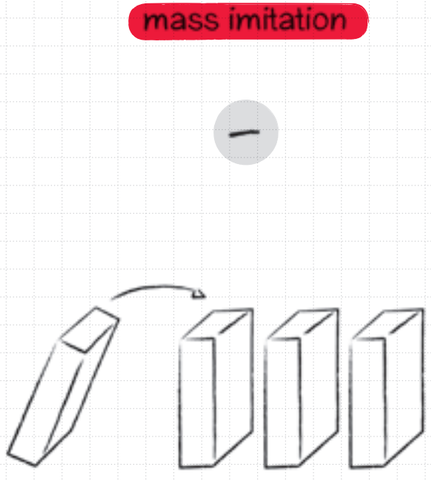
Pink says that in order to prosper in this new context framed by the triple A, we cannot limit ourselves to using only the analytical capabilities of the left side of the brain. We need to learn how to condense the results of combining them with the intuitive abilities of the right. We need to learn to multiply analysis (rationality) by imagination (the emotion of ideas), and to better exploit the right side of the brain and our ability to combine and hybridise elements in new ways, to determine patterns for generating new ideas. This is something that a purely analytical brain, like a computer, still cannot do.

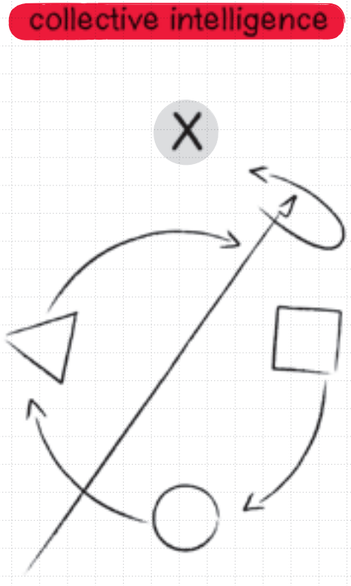
In other words, we need to exploit the fact that we are human – a curious circumstance in a world of increasing automation where total efficiency is the norm. An imaginative economy based on human emotions. The business of multiplying imagination by technology.

In a future of *perfect* machines, humans will still be necessary, because we are capable of bringing expert criteria (intuition and experience, which allow us to resolve problems that don't have a routine solution), and because we know how to use complex communication (the abilities of persuasion, seduction, and conveying passion that some people have). Humans have achieved things throughout history that a robot (at least a first-generation robot) could neither understand nor do.

The *Homo Next*, the human who's coming, is somebody who has no fear of technology, and who knows that the differential human value comes from no other source than humanity itself.

Mass imitation or collective intelligence





We used to accuse the Japanese of being copycats, and now we turn on the Chinese. But the truth is that we have all become imitators. Management books are commonly nothing more than prescriptions of successful casuistry. And the biographies of successful company directors have become the new business *bibles*. The theme is simply how to do it like those who have (apparently) done it well.

Eric Bonabeau[2] reminded us that, as we now know what's happening on the other side of the world as soon as it happens, the innate human attribute of imitation (we are primates, after all) will facilitate a self-referential society. We'll all do the same, wherever we are. Imitation has become more habitual than reasoning and independent thinking.[3]

The problem is not imitation itself, but imitation without reasoning. Imitation from simple habit disconnects us from reality, which can lead to a snowball effect like the stock exchange crash caused by panic, or the sudden changes made by governments as a result of *social waves* produced by new communication media (which multiply the possibilities of systemic imitation). The worst danger is the amplification of faults that can originate from the imitation of anything, good or not, in successive generations of adaptations (it's not the best that ends up winning, but the most imitated).

James Surowiecki[4] says that in many situations, collective decisions are better than individual ones. So while Bonabeau warns of the risk of mutual imitation in a society with excessive information (ours), Surowiecki promises a better world if decisions are made collectively (and, in many cases, informally)[5].

This opens an exciting intellectual challenge. Will the network technologies allow us to build greater intelligence with the connection of new *neurons* (the network nodes), or will the neurons become stupid because they restrict themselves to imitating the most brilliant in their midst? Will the result of the network be the attainment of a better collective intelligence or the reign of mass imitation?

Surowiecki provides an interesting glimpse of the conditions in which the collective would achieve a better result than the individual: when they guarantee the diversity and the independence of the nodes. Any distortion of these two factors would corrupt the final result. A univocal and guided (manipulated) multitude cannot make a more intelligent decision than an independent and reasonable individual.[6]

Apply all this to an organisation, and the challenge is still more impressive: must we continue to depend on the decisions (the *judgement*) of a few (*those who think*), or should we develop decision mechanisms based on the development of the collective intelligence of the whole organisation?

In the coming decades, Europe will suffer from a noticeable decline in qualified professionals (by 2030, we will be short by some 30 million), who we will be unable to replace with skilled immigrants, because upcoming countries will be offering new opportunities to their citizens that will eliminate the *brain-drain* of previous times. While this is going on, half the women in the Western world with scientific and technological backgrounds will voluntarily abandon their professional careers at around the age of 30 with the apparent aim of starting a family.

But perhaps there are other, more subtle, reasons for this abandoning of careers. Some studies show that professional women are generally not as inclined to the *peacock* strategies favoured by men that dominate common business promotion procedures.[7] Women demand that their work be evaluated according to criteria of merit, productivity, and competence, rather than on appearance and organisational politics. When climbing the professional ladder, women demand logic, yet organisations seem to go on appearance. Faced with this, many women become frustrated, and decide this may be a good moment to have children or look for other work more suited to their needs (and to the unequal division of roles that is still practised by most couples).

Other studies show that in an advanced economy, with its high cost of living, couples can only permit themselves to have children when both are working.[8] In order for this to be possible, and for work and family to be compatible, organisations need to create conditions for more *personally* sustainable employment: fewer meetings, increased productivity, better tools, more rational evaluation procedures, objective-based management, etc. The interesting result of all this is that what starts off as *women-friendly* policies actually end up being generally *people-friendly*. And that perhaps the most topical discrimination would not be between men and women, but between *child-bound* and *child-free* individuals.

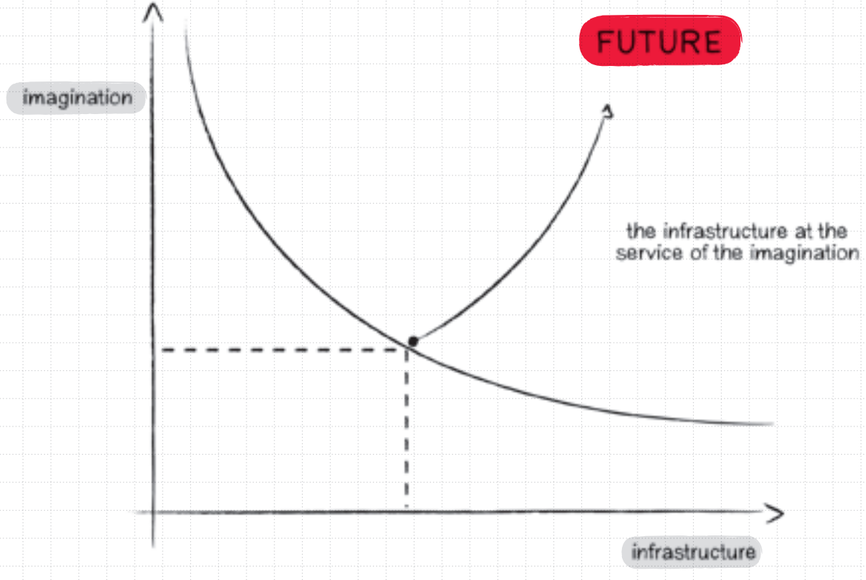
What is more, it has been proved that the type of management skills that will be critical in an economy of creativity and collaboration are more typical of women than of men.[9]

The fact that there will be more women in organisation management is not a question of gender, but of business. We need to define strategies, put the tools in place and implement programmes that allow us to change the way we work. And more specifically, we need to apply policies that directly tackle that *fight or flight* moment that professional women often face in their thirties, and prevent it holding back their careers or restricting their potential talents.

Companies that do this will multiply their *brains* by two, and as a result will increase intelligence – dual, open and diverse – and vastly improve their options for survival in these ruthlessly competitive times.

6

The future as a product of imagination and infrastructures



Some years ago I had a very interesting conversation with Michael Schrage[10]. According to him, the future of cities was in the "shrewd" combination of imagination and infrastructure. Often, he told me, a city has plenty of imagination but no infrastructure, or good infrastructure with no imagination. The difficulty lies in finding a city that combines, in equal measures, the imagination of its people ("its creative class", in the words of Richard Florida) and its deployment of infrastructure (understood in its widest sense, formed by mechanisms to facilitate the movement of everything: energy, parts, people, ideas, etc).

This concept can be applied to any information body, such as a person, an organisation, a city or a nation. In the case of a business, the tension between imagination and infrastructure is the typical tension between people and procedure. But this is also the tension between ingenuousness (thinking "why not?") and engineering (thinking "how can I do it better?"). Or between exploration (what new aspects of the service/product can be developed in response to tomorrow's opportunities?) and exploitation (how to make the most of already colonised spaces in the market to expand today's results).

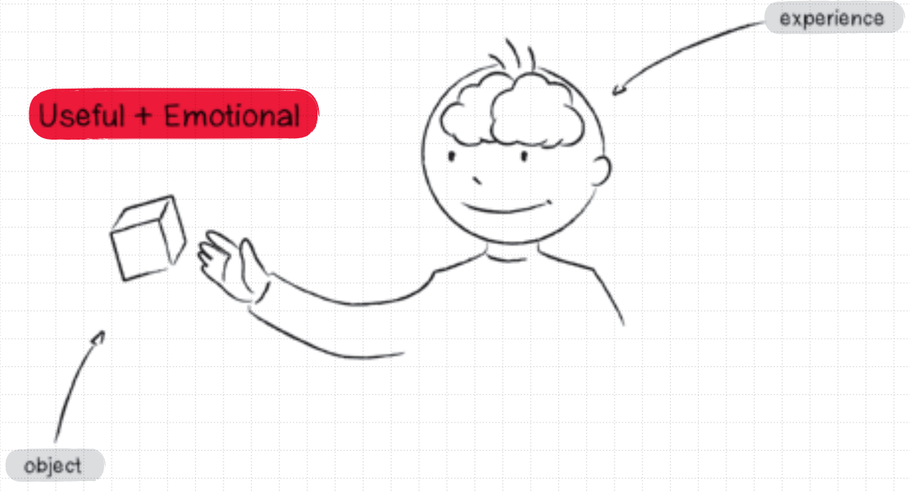
In the case of people, the tension is between creativity and preparation. In other words, between my ability to think beyond what is already known, and my knowledge of a specific field. And again, the problem with people is that they are either very creative or very professional (*sic*), and those with both qualities are truly rare.

As for cities, the question is how to put the infrastructure (places to operate and mechanisms to move people and things) at the service of ideas (more than merely at the service of daily operations or the city's own status).

What I want is a creative city (imagination) in which we can develop solid new prospects (infrastructure).

The graph helps us to determine a possible *trajectory of balance* (as though it were a diagram of a change of state): start from a good infrastructure that will stimulate the imagination of the business or the territory, so that it comes together with its latent imagination, and both variables evolve in sync. That means to better define what infrastructure is necessary to rouse the imagination: an infrastructure that responds to the requirements of the imagination and is not merely *there*. The crucial thing about the graph is that it puts imagination and infrastructure at the same level. Imagination (innovation potential) is not a whim of the moment, but an economic variable as critical as the *stock* of capital and procedures (infrastructure).

Economy of objects



The economy of consumerism promotes our constant purchase of (mostly useless) household items. The ridiculously cheap (so we are told) production of all sorts of objects, in countries whose labour legislation would fit on a cigarette paper (in a size 28 font), means that we have at our disposal a range of the most pointless things – from biros, kitchen utensils(?), keyrings or wind-up walking dentures – at stupid prices. Most people used to own one watch. Today we have at least 10.[11]

We are an economy of objects, let's not kid ourselves. For example, newspapers are free. And the ones we have to pay for more often than not come with added incentives: a series of cds, a holiday novel, or a set of encyclopaedias. Even online subscriptions are encouraged by a free digital version (on a physical cd, of course). The message, to me, seems clear: information is worthless. It is just the accompaniment to an impulse-buy object. Paradoxically, the newspaper is no more than wrapping.[12]

On the other hand, we copy dvds and cds without thinking about it. Digitised information is difficult to resist. But the young people who compulsively copy dvds will also defy any rules of patience queuing for hours to spend a fortune on tickets for a concert. They are not prepared to spend money on the *cd object*; they demand the *concert experience* for their cash.

So, we're not just a culture of *objects* (things) but also of experiences (emotions). We are *hands* (the tools and trinkets) and *brain*, but in this digital age our brains are filled with all sorts of low-cost information and ideas, and appreciates *sensations* more than reasons. The age of pure reason was over a long time ago.

Making objects (and today making emotional experiences) is the basis of our economy. Adam Smith, with his artificial example of the specialist needle industry, said so a long time ago. The problem is that the production of these objects, which used to be carried out in our cities, now often takes place in the most remote places of the planet.

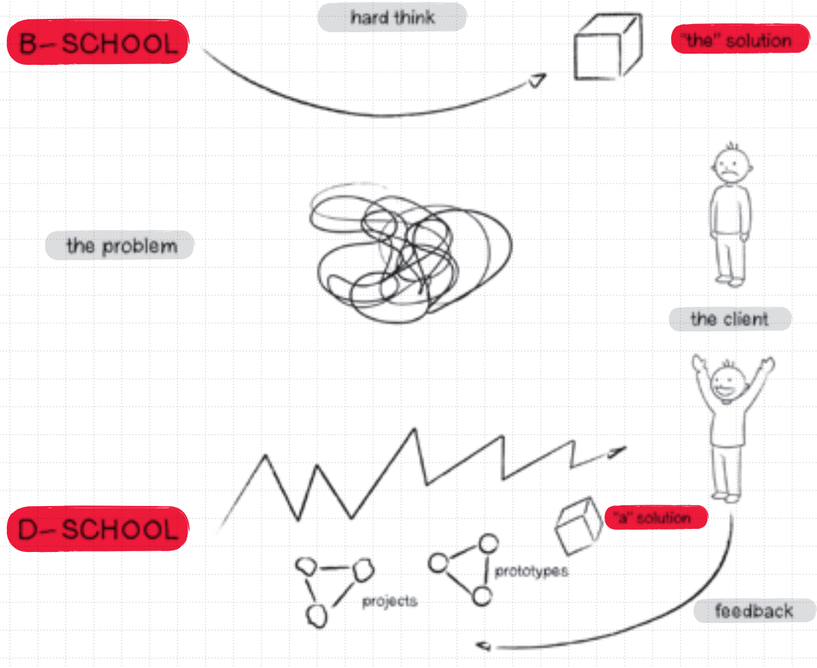
We are told that this is the law of life, and if others can produce goods (better and more cheaply), we need to devote ourselves to *thinking* of new things (innovation and design) and commercialising them (selling objects and services).

This would be fine if there were only a few of us, but actually we are many. And we don't all have a PhD in telecommunications or a well-paid job designing new versions of mathematically perfect aerials. There are many of us who have neither the talent to design new things nor the skills to sell them.

The Scandinavian people have understood this for a while. Many of their businesses concentrate on the conception and production of particular objects (specialist production): medical instruments, all types of tools, new materials, telecommunications, exclusive electrical goods, etc. The Scandinavians seem to have accepted that the path to success is the multiplication of science by business: to invent new concepts, based on a finely-tuned understanding of the world, and to be able to apply them to finding solutions to common problems (which are infinitely and profoundly varied).[13]

new MGMT

8
D-schools



Let us suppose we all understand that what we really need to do is make innovation the focus of our attention. Let's suppose companies understand that it is vital to adapt to what is happening around them, and that the game now consists of knowing how to read the opportunities that emerge and respond to them by recombining their abilities (their knowledge and processes). Given these facts, companies can learn a great deal from *design culture*, from the professionals who have for years have been observing how people act to redefine the products and services to produce better solutions for their needs.

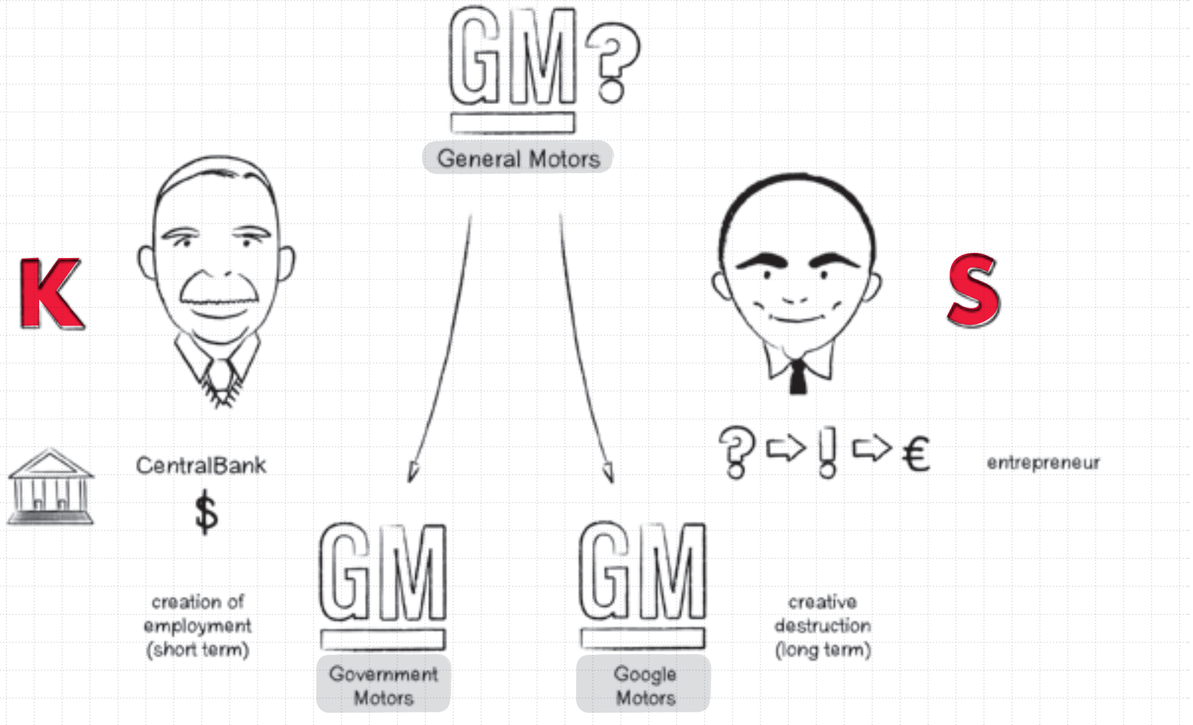
In other words, in an economy of innovation, companies can learn much from the culture of design.[14] In the opinion of Roger Martin, the new business environment means that business people need to "think like designers". The main reason for this is that the complexity of the environment (heterogeneous clients in a mixture of situations, plus global competition capable of anything) requires a non-linear response to problems. A response based on creativity, on the ability to think beyond the ordinary, and even to respond dynamically with a constant stream of approximations to the solution that develop *on the move* (today there is no time to *stop and refill*, because to stop is to step out of the market), all correspond to the fact that there is no one perfect solution.

This implies that an organisation ought to be structured around projects, beginning with teams of the best professionals tackling very specific challenges. It also implies that we must understand that there is no perfect solution to a problem, only (asymptotic?) approximations to the best solution possible, which requires a constant strategy of *prototypes* that evolve rapidly in close relation with the progressive understanding of how they are directed by the market. And the client (or if it is a company, the clients) form an intrinsic part of the design process: the client is part of the company, and continual assessment is essential in order to synchronise *our* solution (whatever we propose) with the *client's* solution (what will be satisfactory to them).

Are business schools preparing professionals with this kind of flexibility? I wonder whether, instead of today's *b-schools* (*business schools*), we shouldn't be building *d-schools* (*design schools*). *D-schools* where students learn a triple vision: *management*, technology (the tools), and *design* (a way of non-linear, creative thinking, oriented to respond dynamically to observations, and focussed on finding solutions that are more probable than definitive).

There is a structural debate at the heart of this question: if Western production is relocated to Asia (and soon to other parts of the world), the type of management needed here will not be operative but creative and relational (creative to imaginatively think product/service/solution, and relational to synchronise with the market).[15] We are going to need creative thinkers instead of analytical thinkers. From the *hard think* (referenced on the calculation page) to the *soft think* (whose principal mental instrument is the map of ideas).

K x S = Keynes x Schumpeter



The financial crisis (reduction in credit) that began in summer 2008 with the fall of Lehman Brothers, quickly became a global economic crisis (increase in unemployment), and threatened to bring with it a social crisis (poverty and disruption) that finally never arrived. Many economic analysts have warned that this was no ordinary crisis, but was possibly a structural crisis. A crisis that emerged from a profound change in the socio-economic model. The extreme industrial efficiency achieved during the 20th century, together with the unmeasured stimulus of consumerism, had resulted in a two-sided situation of hyper-production and hyper-debt, and made worse by the reality of declining natural resources, oil in particular.

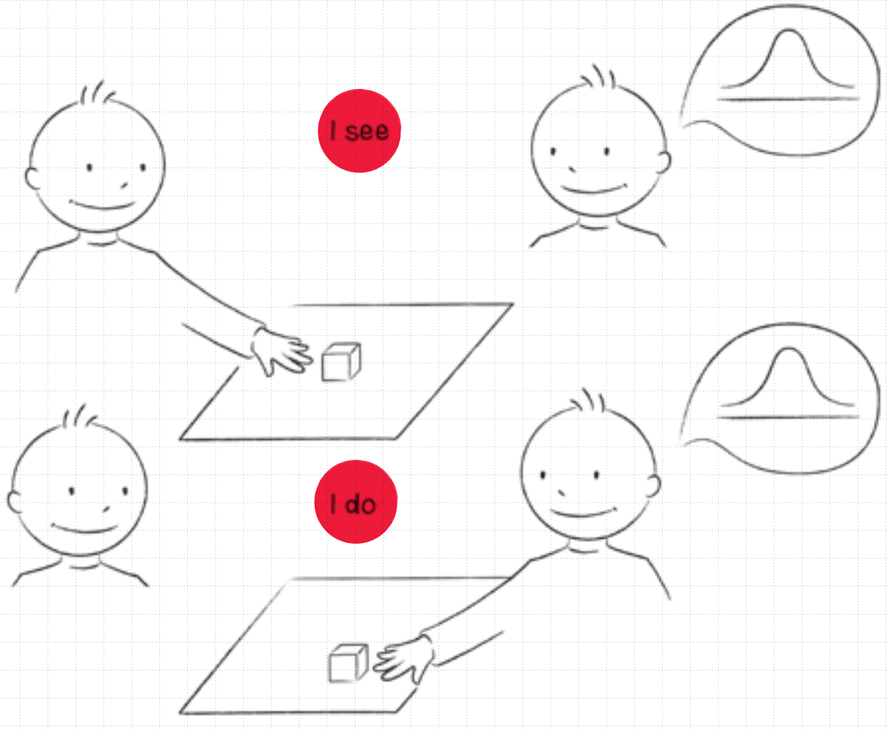
To resolve the crisis, countries reacted with Keynes' method, with huge *packets* of economic stimuli with the objective of creating employment in the short term. In the US alone, between direct aid and fiscal support, $900,000 million was mobilised. Of that, 100,000 million was destined for scientific and technological development. For the first time in history, it was possible to create millions of jobs through technology, especially in the field of green technologies. Even though, during the last decades of the 20th century, Western economies lost millions of jobs in factories (*blue collar*) and offices (*white collar*), perhaps the new technologies in energy and sustainability will be able to recreate them in the first decades of the 21st century (*green collar*).

But many people pointed out that these crises are a natural effect of capitalism. Schumpeter summed it up perfectly with his words of caution: "stable capitalism is a contradiction in terms". The main mechanism of capitalist progress is *creative destruction*: less efficient businesses must disappear in order to make way for new and better ones. In a very Darwinian evolution, only the businesses that best adapt to new market conditions will survive and grow. It is the entrepreneurs, who question conventional methods, that bring progress to the economy and society.

Who should we listen to – Keynes or Schumpeter? These two great economists, both born in 1883, proposed very different versions of what moves the economy, and in particular, of what to do in moments of crisis (Keynes favoured the power of the state; Schumpeter advocated the role of innovation). Historically, Schumpeter had to make do with second place to Keynes' ideas, which helped to combat the great crash of 1929. But fortunately today there are many people who support the relevance of creative destruction as a capitalist engine.

It is possible that the solution consists of going beyond the individual K and S models of state and market, and backing a combination of both factors: the power (solidness) of the state, and the risk (vision) of the innovators (and entrepreneurs). We have a historic opportunity to find out if massive investment by the state in new technologies can create a wave of technological innovation led by entrepreneurs, and create employment in the short term and economic growth in the long term. The financial power of the state multiplied by the transformational power (*natural selection*) of the market (the entrepreneurs). It is no longer about K or S, but K x S.[16]

10
Mirror neurons in business



According to Daniel Goleman, the rational part of the brain (the prefrontal cortex) can be *halted* by the emotional part (the amygdala), and this happens in stressful situations when the survival instinct of the amygdala takes over (the prehistoric ego emerges to save us from imminent danger, just as it used to when we lived in caves).

What's more, experiments with primates have shown that they have a type of neuron in their brain that is activated not only when the animal performs an action, but when it observes another animal performing an action (especially one of its own species). In other words, these neurons replicate (reflect like a mirror) the behaviour of another animal. They are called the *mirror neurons*.

Experiments with functional magnetic resonance imaging (fMRI) have found evidence of this type of neuron in the human brain. It is believed they could play an important role in learning by imitation and in language development, and some scientists have gone so far as to suggest that problems in these neurons might be related to autism. The mirror neurons convert visual information into knowledge.

If these hypotheses are correct, the technological metaphor is simple: it's as though the human brain were permanently connected to *wifi*, and the mirror neurons were the connection equipment (*hub* and *router*). Mirror neurons could be significant to understanding human empathy. "Emotions are contagious", says Goleman: if you're happy, for example, so are those around you. If you do something with conviction or passion, you transmit those feelings to others, like your work colleagues.

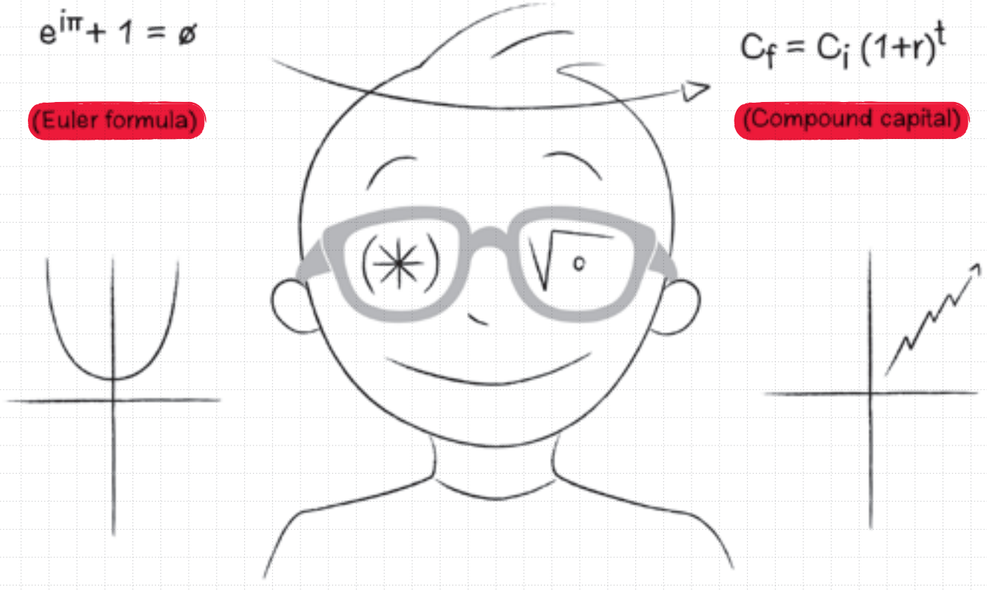
And what if the organisations themselves had *mirror neurons*? What if organisations were able to reflect the movements of other organisations? Would creating a framework of success help an organisation to function better?

This would confirm the importance of the *mental state* of a society when it comes to innovation. A society that is anchored in the past, with a conventionalist discourse and tradition its only champion, will not create the *social sustenance* necessary for its inspired members (there are always some) to prosper. Because, among other reasons, an old-fashioned society is usually pessimistic, which doesn't help to generate the new demand needed to stimulate the inspiration to design, make and sell the products of their talents. Being surrounded by inspirational innovators is, of course, fundamental. And that basically means three things: these innovators must be detected, revealed, and united.

Detecting them is quite simple: we just need to want to see them. A society that doesn't want to see its innovators or to recognise their relevance in society, quite simply won't get the most out of them. They'll be invisible to the society. It's important to find them, to connect them, and combine their varied potential.

The future consists of connecting the *free radicals* in economics, to come up with new products and markets through the multiplication of diverse differential fields of knowledge.

11
Maths for biz



The title of this article is somewhat unsexy. Because maths has traditionally been the bane of many scholars, and one which tends to stick around for life. But if a young student came to see me right now, on the point of deciding what to study for a bright future, I would advise maths without hesitation, and what's more, I would recommend applied maths. Because I believe that without models or quantifications, modelisations and algorithms, it would be very difficult to convert the incredibly complex reality that surrounds us into a new value. Any mind capable of constructing these models will be of high value in a world where everything is interlinked, and in which, without the weapons of logic and general maths, nothing will be decipherable.[17]

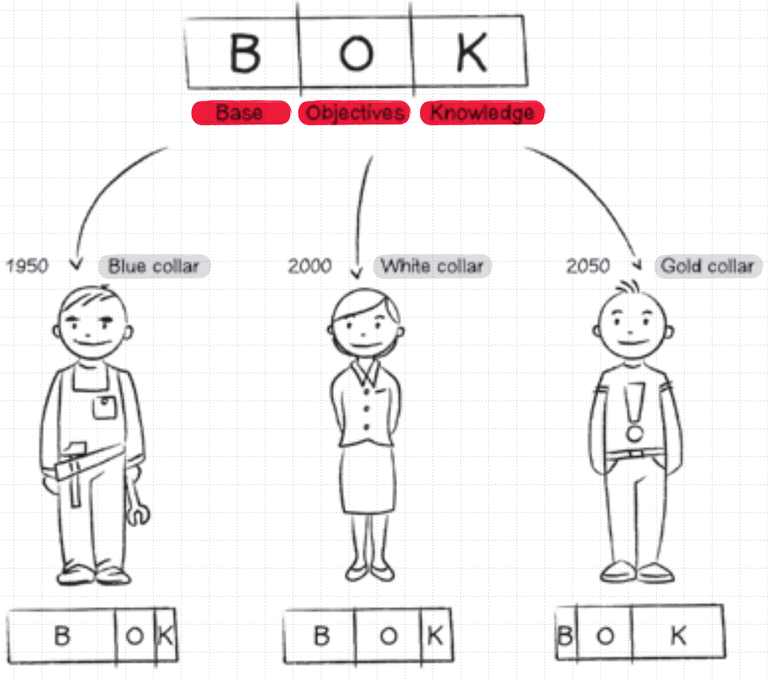
Maths is more and more important in the business world. For example, scientists all over the planet are trying to replicate life in computers. More specifically, to replicate viruses and unicellular organisms, to see how they behave. What difference is there between observing a virtual organism and a real one? The fundamental difference is the ability to *accelerate* time. A virtual organism can evolve just like a real one, but the analysis of its evolution can be more detailed using simulations that enables scientists to manipulate time. In this field of artificial life, there is even an equivalent to the Turing test: the idea is to simulate an organism that appears so real that an expert eye is unable to distinguish it under a microscope from a real organism.[18]

Another interesting example is the analogies (isomorphisms) that emerge between apparently unrelated fields. For example, researchers have discovered an existing similarity between the curve revealed upon analysing the pattern distribution of movement by people with severe clinical depression, and the curve that shows the activity of nerve cells isolated in a Petri dish. There is an analogy, at least from a mathematical point of view, between isolated minds (such as those of people with severe clinical depression) and isolated cells (with no electric stimuli that unite them with other cells).[19]

Another example can be found in the application of simulations of the spread of epidemics. For example, a team from Northwestern University uses the pattern of the movement of one dollar bills to model the expansion of H1N1 (swine flu) virus.[20] Another example is the projects that analyse how people care for their virtual avatars, in order to see how they would behave in real life faced with the risk of contagion. More specifically, the spread of a plague is introduced to a videogame, so that online players (the avatars) can be infected.[21]

The way people behave (caring for their virtual characters) in these virtual worlds is extremely similar to the way they act when exposed to real infection. So, unexpectedly, the world of videogames has become a potentially powerful ally to epidemiology.[22]

The crossover of maths and business results in a better understanding of reality, through the study of analogies and the creation of models, so that we can accelerate the creation of value in the form of new products and services. Because, as Keith Devlin says, the aim of maths is to make the invisible visible.[23]



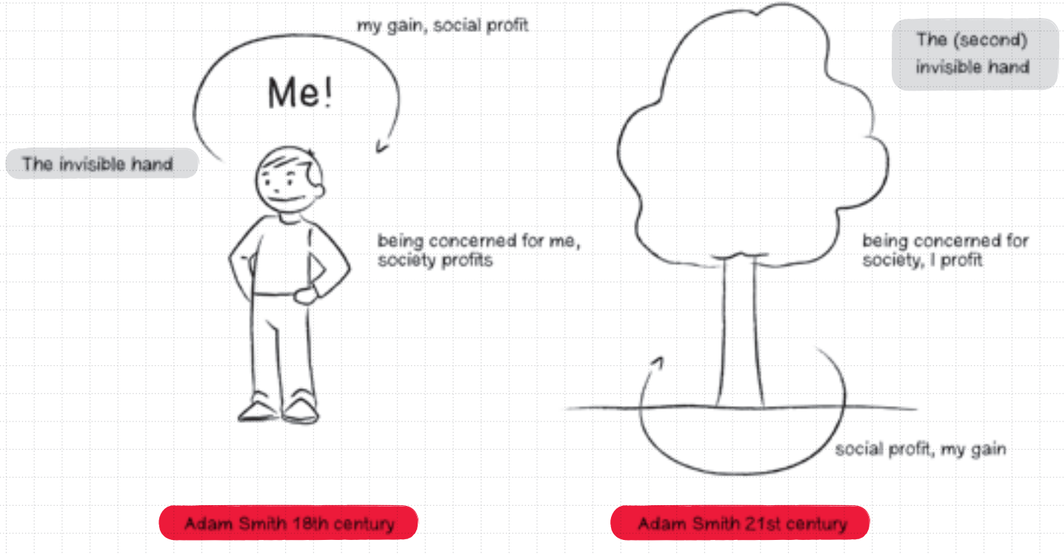
We consider it normal that an employee's salary is directly related to the time he or she spends at work. The contract between employer and employee is built on the logic of money in exchange for time, just as Rousseau's *social contract* established it in his time. One form of surviving in times of crisis consists of working extra hours, or looking for extra work and entering multi-employment. And some of Europe's most significant management/syndicate disputes in recent decades have been focussed on the possibility of reducing the working week to 35 hours, or even fewer. The importance of the number of work hours is obviously a significant factor in the current socio-economic model.

This might make sense in a manufacturing economy that demanded a resistance to routine from a depersonalised workforce. In a production chain, tasks are very specific (it was precisely this exact nature of work that motivated the scientific *management* of the Fordist-Taylorist revolution). It is the responsibility of routine itself that demands, in return, that the time dedicated to it should be limited. In this context, it is logical that an employee in manufacture aspires to earning more in less time. The answer to this could be a robotic workforce, as it can cover an important part of the work (as has happened in car production), but this can also cause new problems, particularly when computers become so *intelligent* that that start to replace humans.

In the present climate, many jobs have dropped the "money in exchange for time" relationship. Now there are jobs that prioritise the completion of objectives. For example, in many positions of responsibility in commerce, basic salaries are very low, even non-existent, but the performance-related pay for specific criteria such as sales can be substantial. This can also free employees from a *fixed* timetable: they can work when, how, and where best suits them, as long as they accomplish their set goals. This set-up is particularly relevant for people whose family arrangements require more flexibility (think, for example, of the growing number of all types of single-parent families).

Finally, in some jobs we are starting to observe that what counts is not how many hours employees work, or even that they accomplish specific goals, but that they possess differential knowledge, which gives them the ability to compete in complex environments. For example, we have seen how in some (highly specialised) elite consultancies, high value is given to an employee who has knowledge that saves somebody else from having to reinvent the wheel. Imagine that a consultant in Tokyo has to give an intelligent response to a client from the chemical industry regarding a project about which the local office does not have sufficient information. The consultancy's knowledge intranet means that the employee can send the question out to all consultants in the network who have the necessary knowledge of the chemical industry. Somebody in Chicago might know the relevant information, and they can send it. The Tokyo consultant applies the information, and the Chicago consultant receives a *bonus* at the end of the year for contribution of differential knowledge to the company.

The further we advance towards a society of value, the further we will move from time-related salaries, basing them instead on goal achievement, and the value of employees will be progressively focussed on the contribution of knowledge.



Adam Smith, the founder of modern economic theory, used the metaphor of the *invisible hand* in his time to illustrate how each individual pursuing personal profit results in profit for society as a whole: "by pursuing his own interest [an individual] frequently promotes that of the society more effectually than when he really intends to promote it [directly]".[24] Due to the rules of supply and demand, of competence and every individual's search for what suits them best, a spontaneous order of society's resources is produced. In an example cited by Smith, the fact that we have meat available in a city is not down to the butcher's benevolence, but to his desire to earn a living.

Explained in another way, by prioritising my own well-being, I contribute to the well-being of society. But the most interesting point of Smith's idea is that this mechanism of self-interest is, in his opinion, more efficient than the actions performed by the *government*. So, environmental deterioration will not be resolved by good intentions, but when each one of us understands that it is more beneficial to preserve the environment than to let it continue to deteriorate. The hunger in Africa will not be resolved with millions of pounds worth of aid, but with the creation of thousands of businesses, set in motion by the continent's entrepreneurs, who aim to increase their personal wealth, and with it create more wealth for their countries. The problem of acknowledging women directors will not be resolved (only) by actions aimed at promoting equality, but when companies understand that their skills are needed, and when women stop inhibiting themselves and lay their directive talents decisively out on the table.[25]

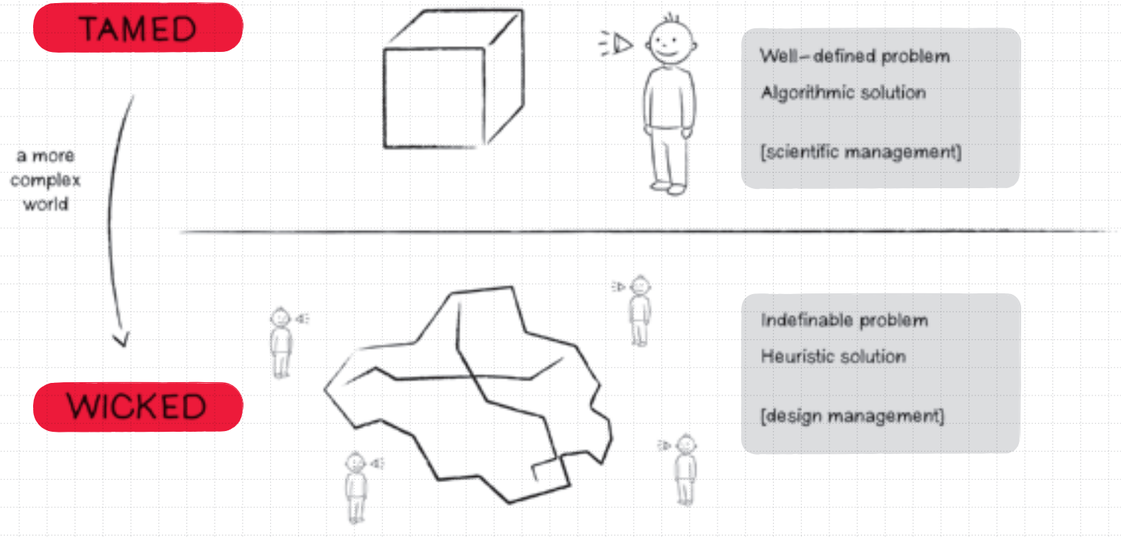
In a similar vein, Alex Steffen, the founder of the WorldChanging project,[26] agrees that the environmental problem will not be solved by governments, but by businesses.

And this is where we discover what could be called the "second invisible hand": companies, in seeking to benefit society as a whole, will end up improving their own profit (*do well by doing good*). The theory that it is *compulsory* to choose between earning money and doing good for society is now obsolete.

For example, in a social context sensitive to environmental issues, a company that respects the planet will appeal to more and more people. This might seem no more than a nicety today, rather than an imperative, but things are changing fast, as the negative impact of a century of unrestrained industry becomes more and more apparent. The same thing will happen with companies' dedication to achieving a fairer world: at the moment relatively few people prioritise fair commerce, but it is very likely that this will be a concern of the majority in the future. The main impulse behind this may not be companies' desire to be charitable, but the need to exploit the trends of new consumers in new places around the globe.

We find ourselves, then, with social benefits emerging from the individual search for satisfaction, and with private benefits resulting from organisations' concern with the collective good. A second hand from Adam Smith balances the symmetry that marks out our species. And the question of *left* and *right* can be removed: in economics there is no such thing as right or left-handed.

14
Wicked problems



As a society, we have to face increasingly complex problems. Unique problems, difficult to define and interlinked with other problems. Moreover, these problems become harder to solve because the different components implicit in their potential solutions each pull in different directions: the complexity of the problem itself, multiplied by the social complexity of its context, shatters the potential for collective intelligence.

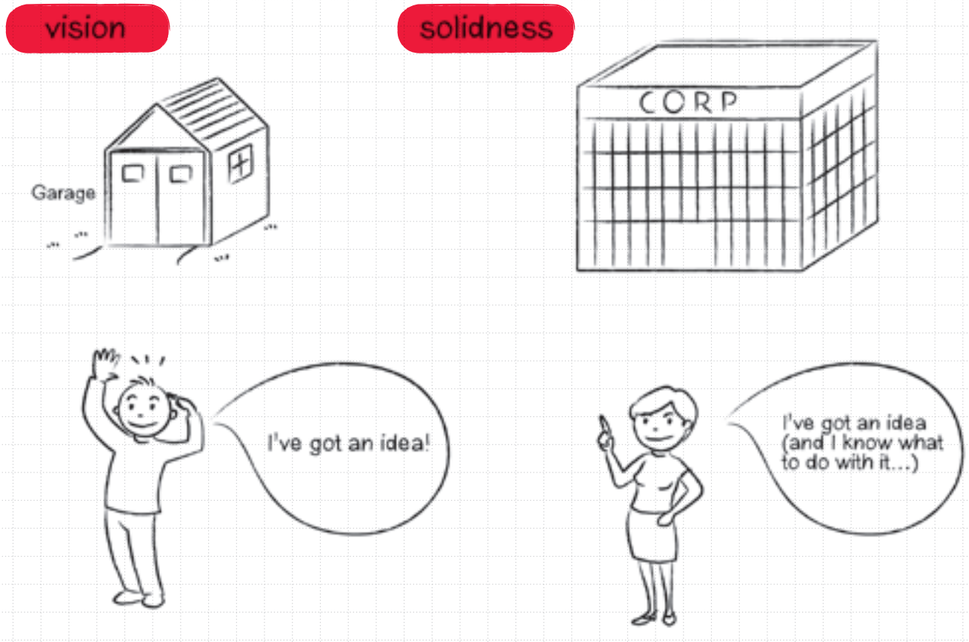
The problems that worry us today are multidimensional. How can we solve the destruction of the environment? How can we fight online terrorism? How can we forge a *dialogue* between the West and Islam? Which is the best way to resolve a crisis – implement state stimuli or promote entrepreneurial activity? How can we improve the quality of our children's education? How can we ensure that a corporation's different (vertical) divisions collaborate on transversal projects? All these problems are very difficult to describe succinctly, and cannot be resolved with a linear, algorithmic approach or a mechanical process.

Science, due to its empirical method based on reductionism (making the object of analysis small, manageable, and able to be studied), has made great advances in its understanding of the world, and in answering questions through technology. Building a bridge across the *Strait of Gibraltar* might take up time and resources, but in the end it comes down to mathematics.

But many problems that concern us as a society are neither accessible nor resolvable using scientific reductionism. In fact, they may not even be definable. There is no one solution (*the* solution), only a potential partial solution. In contrast to conventional problems, which are definable and resolvable (such as calculating a square root), known as *tamed* problems, we are coming across more and more complex and perverse problems, which we call *wicked*.[27] Problems that require a heuristic approach, via trial and error, applying prototypes and testing, in a process made of learning and approximation.

Some characteristics of wicked problems are: the nature of the problem is not fully known until a partial solution has been found; there is no way of determining when the problem is completely resolved (there is no end point to the resolution process); solutions cannot be correct or incorrect, only partially correct and incorrect; each solution is new and unique, because there are no two uncontrollable questions the same; each solution implies the acceptance of its limitations (there is only one *bullet* in the chamber), and there is not *one* other option, but many.

The intrinsic indefinability of the problem and the inexistence of *the* solution imply that to resolve a problem requires the ability to *socialise the solution.* In other words, everybody involved in the acceptance of *one* solution must agree that it is *a good* solution. To do this, it is vital to establish a shared understanding of the problem ("at least we agree on some of the elements of the problem"), which leads to a shared vision of where to look for a partial solution. Therefore, we need new methods, ideas and tools so that well-diversified groups can work together in the search for the best partial solutions to many *wicked* projects.[28]



One of the most established myths about entrepreneurs is that many large companies are the brain child of young and inexperienced, but brilliant, people working away tirelessly in a garage, trying out one thing after another (this is the legend behind HP, Apple, Netscape and many more). But reality seems to show that new businesses often come out of the hybridisation of special talents that have been quietly maturing in previous jobs, working for the older and established companies.[29]

Studies[30] show that many new companies are, in reality, *organisational products*, which means that they are built up by professionals with long-term experience in an organisation and detailed knowledge of the field –particularly of its weaknesses and inefficiencies – and it is this knowledge that creates an ideal opportunity to launch a new business.

The legend of the entrepreneur tucked away in a garage may seem appealing, but it doesn't correspond with reality, and it can mislead potential business geniuses of the future. Notably, the myth ignores the relevance of the innovator's *organisational socialisation* gained prior to the idea's development. The conclusion is obvious: if you want to create a company, rather than finding a garage, find a job in a company where you can develop your skills, until they reveal that idea that will become your own company.

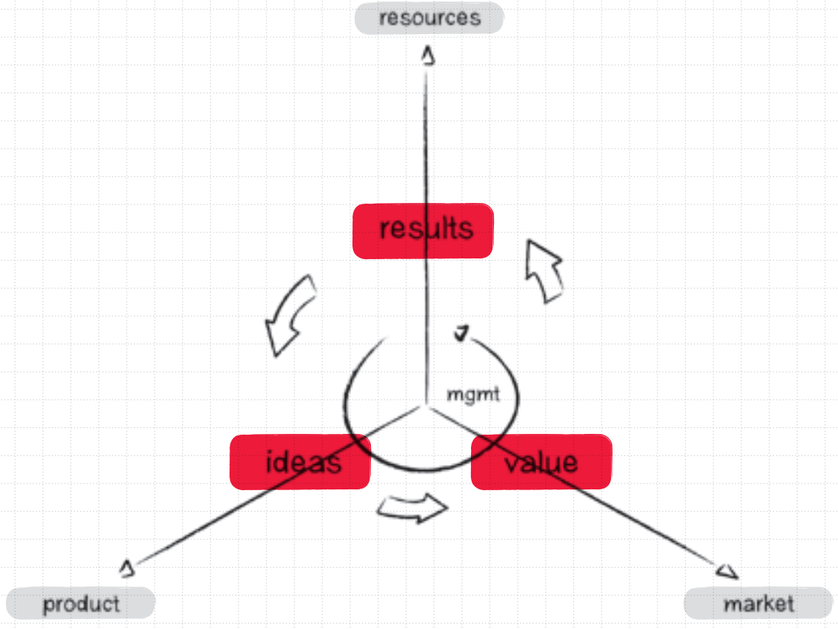
A study sponsored by capital investment risk companies indicated that 91% of the companies endorsed by this type of investor were related to the previous professional experience of their founders.[31] It is within *conventional* companies where future entrepreneurs acquire the confidence, business knowledge, and social connections necessary to embark on their own project.

Businesses are not born in garages, they are born in other businesses.

Understanding this now is of crucial importance. Because in these times of imagination with high economic potential, but immersed in an environment that is unwilling to invest in innovation, solid existing companies could contribute to the development of new wealth by guiding emerging businesses which can supply a vision their predecessors often lack. Stability in exchange for multiplied vision, and vice versa, something we discussed in the idea–force of *Middleground* (see page 27).

The idea is that innovators working for companies would not be deterred by the limitations of a *conventional* way of working (the number of professionals who consider their company incapable of doing anything innovative is impressive), but that the company could provide the possibility of innovation from within. So that, perhaps, they would become *intrapreneurs* (innovators within the company) or entrepreneurs (creators of a new company, related or not to the original one).

All management is innovation management



According to conventional interpretation, a company is a machine that converts resources into results. In other words, it transforms resources into value for several agents, by converting complexity and specialisation into *performance*.[32] This mechanic interpretation of a company can be illustrated by a three-dimensional image, with the axes product/market/resources.

In this image, the ideal trajectory of a company would consist of conceiving a product that corresponds with the market, employing the available resources to produce it, then using it to generate more resources to begin the process again. Traditionally, companies followed this trajectory just once: they defined the product (usually thanks to the expert intuition of the company founder), found the market, and there they remained. The resources they produced were used to improve the existing production process, but not to think up new products (why bother, when they already have a product that works?), or to break into new markets (international logistics, for example, used to be a highly complex process).

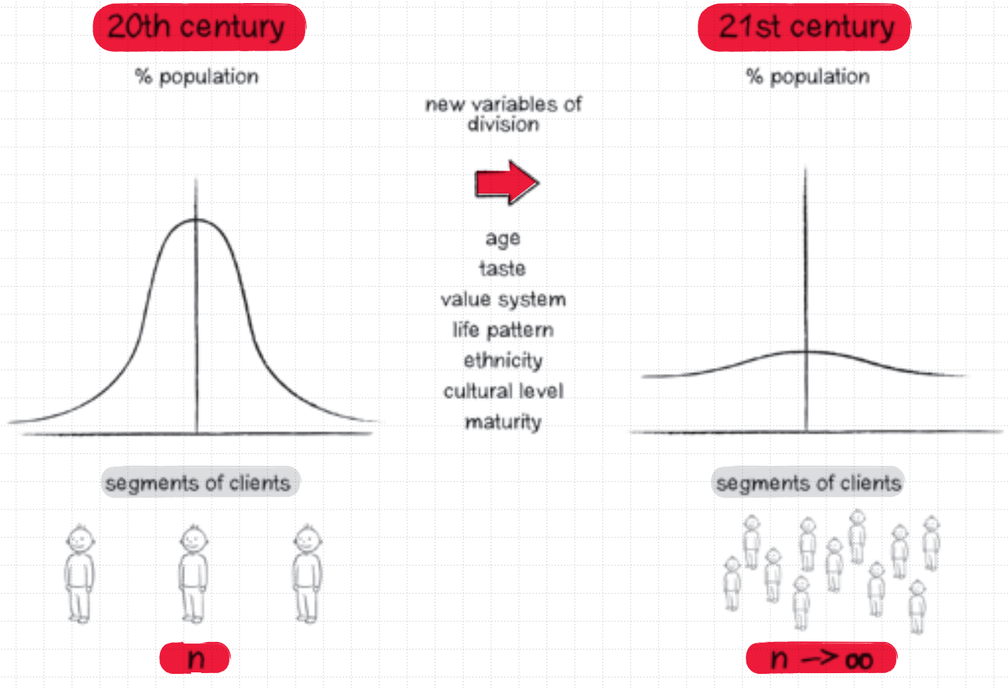
The functional division of a company into these three principal areas was a highly specialised operation, studied in business schools. Its objective was *narrow perfectionism*:[33] the construction of models in order to understand (and predict) their respective areas, with no interest in connecting these models with those of professionals in other areas. And from here came innovation. Innovation consists of transforming ideas into value for clients, thus generating a sustainable profit for the company. The three principal components of innovation are ideas, value and (sustainable) results. Innovation would therefore be an engine that drives from ideas to value and from there to results; an engine that should never stop.[34] With this, we have gone from understanding a company as a process of resources to results, to one of ideas to value.

When we superimpose the three-dimensional image (product, market, resources) on the three components of the innovation engine (ideas, value, results), it is obvious that the function of *management* is to agitate the world (inside and outside the company) in search of pliable ideas that can be converted into a product (or service) that will be seen as valuable to the market, and which promise to turn resources into results.

The world is so complex and unpredictable that a management which is not variable, adaptable, and innovative will be impossible. We need to invest more effort into ideation (more ideas that provide differentiation) and into analysis of value (what is interesting and to whom; who is prepared to pay for what). It's time to stop squeezing the idea of innovation into management programmes, because these days it is impossible to talk of management that is not management of innovation.

The death of the average and the long-tailed economy

17
The death of the average and the long-tailed economy



Until recently, the choice between a few television channels meant that everybody watched the same programmes: there was no option but to be part of the statistical peak. Today though, audience statistics are much more dispersed over multiple options, and it is very rare (only the occasional event) that such *peaks* as before are achieved. And now, with digital TV, these peaks are destined to disappear completely.

The world is no longer a place of peaked averages, but of flat distribution. There is more diversity among people, in a wide range of clans, groups, cultures, and lifestyles. Today diversity is the norm. The norm is the not normal. The mass no longer reigns. And this has been labelled the "death of the average". The market *hotspot* is no longer the focus of the 50% that generated most of the profit. Profits are achieved over a much wider spectrum.

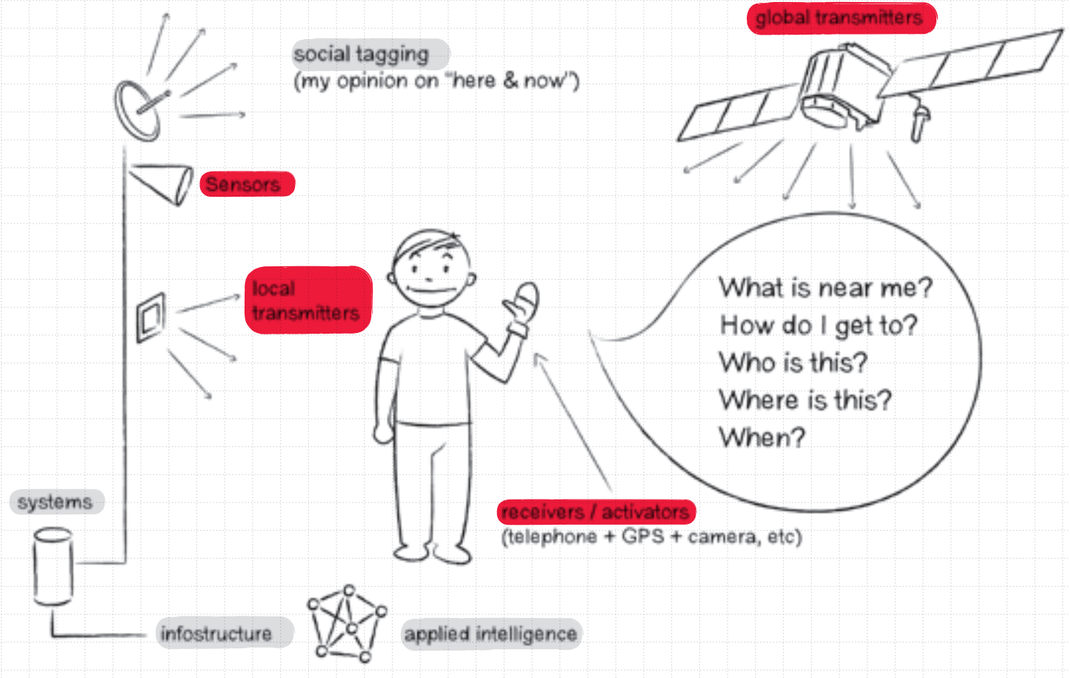
But at the same time as the death of the average comes another phenomenon, named by Chris Anderson, chief editor of *Wired* magazine, *the long tail*: the niche markets on the Internet are immense and economically relevant.[35]

An example to help explain the idea: if you opened a shop selling second-hand Madelman dolls in a Spanish city, the most likely result is that you would die of starvation. But things might be very different if you opened your shop online and made your products available to the whole world (through e-Bay, for example). It doesn't matter what obscure endeavour you are involved in, if you promote it properly through the web, hundreds or even thousands of interested customers will appear. The reason for this is, of course, the vast distribution of the Internet. More than 1500 million people are now connected.

So we are now seeing that there is economic life (or rather, commercial life) in the *tail* of normal distribution. In a market made up of hundreds of millions of potential clients, marketing tails are far from worthless. An economically significant result is generated by amassing thousands of sales of millions of products, instead of millions of sales of a few thousand products.[36 37]

According to Anderson, the crucial factor that creates a long tail to a market is the cost of stock storage and distribution. When these costs are insignificant, it becomes economically viable to sell products that are relatively *unpopular*. But when the costs of storage and distribution are high, the numbers only add up when the sales effort is focussed on the *best sellers*. In a traditional video rental shop, having the films physically available is expensive, and the shop must focus on the films that create the highest turnover. But for a virtual shop, the cost of storage in a remote place is incomparable, and it is worth having a large catalogue of films, which in the end is what appeals to customers.

info



One of our principal concerns in these times of information overload is how to avoid *information anxiety*, or at least, how to reduce it. In other words, how to find *qualified information* that helps us to discern, from the many options available, which is the best at a given time and place. It is the time of relevant versus exhaustive, and of relevance in real time. Of finding the information we need, at the right time: which here I call *i-biquity*.

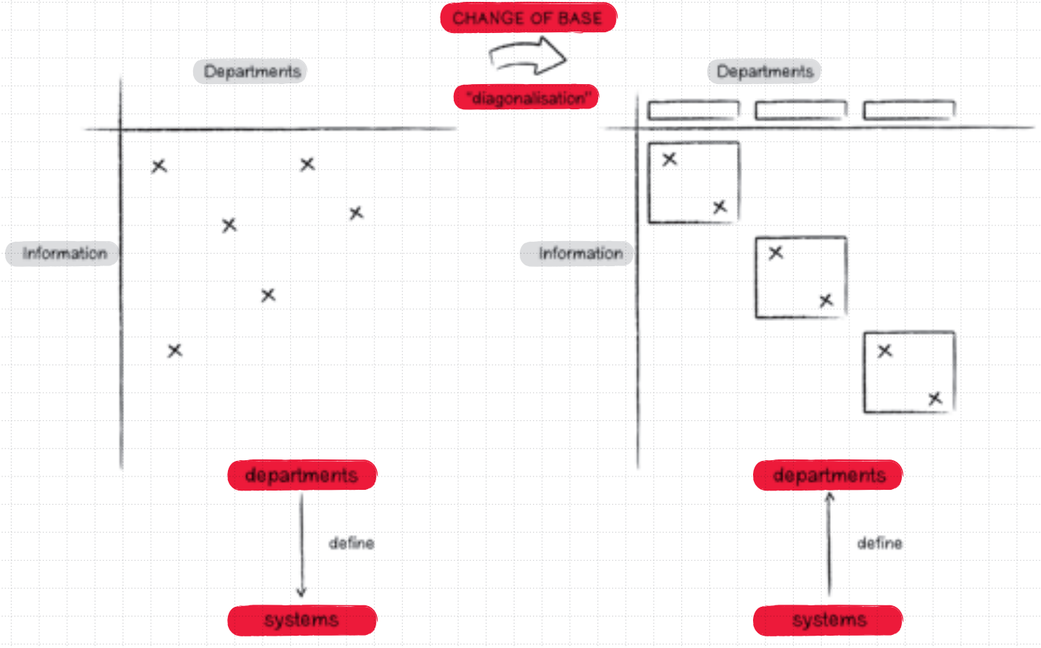
The Internet's current aim of *ubiquity*, with the objective of connecting you wherever you are at whatever time, will soon be overtaken by the need to guarantee that its users can access the information they need to be efficient (the source of personal productivity) at any time and from any location, whilst enjoying a better quality of life.

For example, when I am waiting on a platform in the underground, the information I need is when the next train will arrive. *It is great* that I can access a television screen that will tell me what's happening on the other side of the world, but what I really *need* to know is the time of the next train. This information contributes to reducing my information anxiety. Moreover, I ought to have this information about the next train while I am still in the street, so I can decide if I want to take the underground according to my time constraints. At a bus stop I would like to be able to *draw* the beginning and end of my journey on the bus map, using only two fingers (one from each hand), so that the system can *tell* me (*answer* me) which are the best connections between those two points, allowing for the current traffic volume, and the time I will need to complete my journey.

If I decide in the end to take a taxi, I would like to be able to speak directly on my mobile phone to the nearest available taxi, not with the headquarters of the largest firm. If I choose to cycle, I want to know where the nearest public bike-hire centres are, and how many bikes are available at this precise moment in each one (in real time). If I drive, I will need my GPS to tell me where I should slow down (*informing* me, not *penalising* me). And, when I get out of the car, I want to know where to find the product I'm looking for at the best price, with some sort of GPS for localising products in the immediate area (*proximity marketing*). If I'm on the train, I'd like to be able to fall asleep knowing that my mobile, GPS enabled, will alert me with an alarm when we are nearing the station where I want to get off.

The development of the concept of i-biquity will require, as we can see from these examples, a combination of *hardware* that we carry with us, and *software* that stimulates the interface between us and the *hardware*. Some of these pieces of necessary *hardware* will be built into the instruments that we already carry around with us, like our telephones and watches, or *hybrid* forms of these, but others will be totally new. These will inevitably stimulate the emergence of a whole new industry.

Information diagonalisation



It's paradoxical to see how little organisational structures change. We are still using practically the same structures that we were at the beginning of the production revolution, at the beginning of the 20th century or even earlier. We have inherited the administrative departments of a time in which information systems were non-existent. An example that is especially prominent for me is the human resources department, the name of which indicates a productivist use of people that does not fit in with the realities of a talented and creative society.

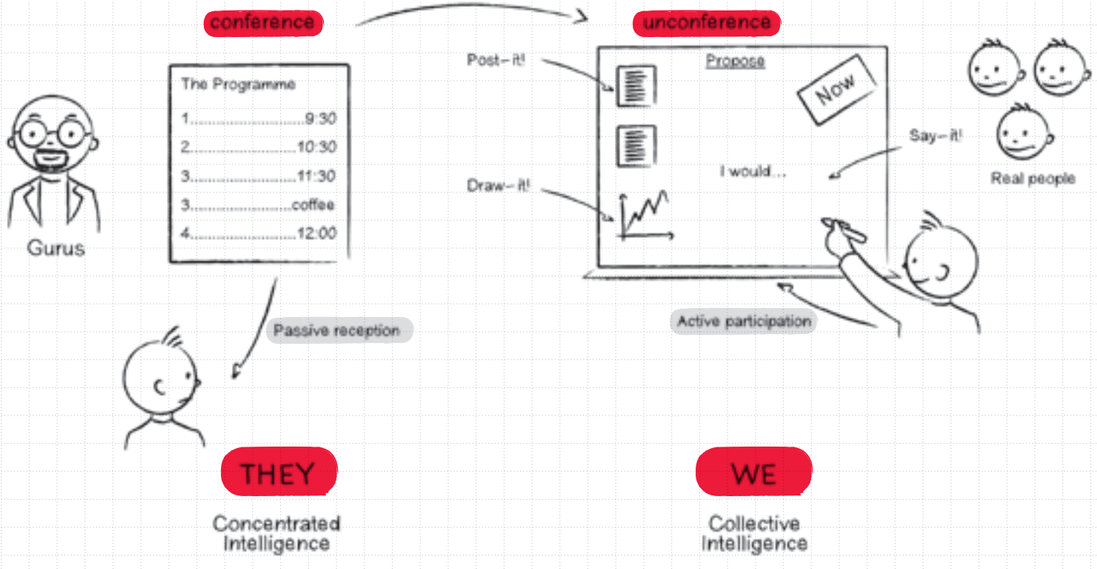
The truth is that we are starting to see change. Recently I found out that the sales department of a pharmaceutical laboratory has been renamed DoubleDigit, thus advertising their principal objective of doubling their growth every year. I have also seen how a public television channel changed all the names of its departments in order to motivate its staff with a new *portrayal* of the organisation's objectives. But as important as these changes may be, I believe they are merely a signal of the more drastic changes ahead.

Imagine for a moment that we enter the names of all the departments in an organisation into the columns of a graph. And in the rows we enter the elements of information used by the organisation. A typical department would be accounts, or production, or design. The rows might be the client database, the installation map, or the budget. Normally one topic of information (a row) is used by different departments (a column). But let's go out on a limb and ask why, if two or more departments use practically the same information elements, we can't *rethink* them as a single department.

In mathematical terms, what we are proposing is very similar to the *diagonalisation* of this information-departments graph. What would happen if we combined the departments that use the same information? The resulting graph would be diagonal, and would certainly reflect the current reality of organisations more effectively than the reality of a more administrative age, when there was a lack of adequate information systems.

Let's take local council as an example. Different departments use the same essential information, the *map* of the city, where all the relevant information for the daily management of the city is organised. What if the most important thing for the local authority to do was invert the map? What if they turned the graph by 90° to make the information rows (the map, the database, the budget) more relevant than the departments? What if it then became apparent that the information systems were not merely the support of the organisation, they *are* the organisation?

We get the impression that, as the density of information about our activities advances, that is, as the management of information resources moves towards the centre of our organisations, the more sense it makes to consider them the organisation itself. In other words, maybe it no longer makes sense to talk of information systems *within* organisations, but organisations that *are* information systems.[38]



Conventional conferences are dead. You always find the same people, with the same problems and ideas. They are no more than concentrations of mental endogamy. Conferences are a reflection of a business reality that has brought us to a model in crisis. In a fascinating paragraph in their book, *Karaoke Capitalism*, Ridderstrale and Nordstrom revealed how a simple visit to Amazon's purchase circles shows how the people in the important companies of a specific industry all buy the same books, despite the fact that all these organisations are forever emphasising the need for perspective. In other words, they are all looking in the same direction, because they all absorb the same sources of inspiration.

A variety of sources is a prerequisite for innovation. In order to find new ideas today it is vital to introduce people to different experiences, because it is variety that generates innovation. Those seeking to fertilise the world's best minds are creating new ways and formats of introduction. They understand that freedom of difference is the future. A plain example of this is the Californian TED[39]: real introductions that are *enjoyable*, in social places that facilitate flashes of inspiration from the people of all the different worlds converged there. Innovation cannot come from people who get stuck in one place, but from hybrid fantasies between different species.

We must reinvent the practice of introductions between professionals, with more eclecticism and cross-referencing. This may also imply the need to hold them in different physical locations, as innovation is not created in traditional places. And we should hold them periodically, systematically, to bring people out of their own space and open their minds to creative survival.

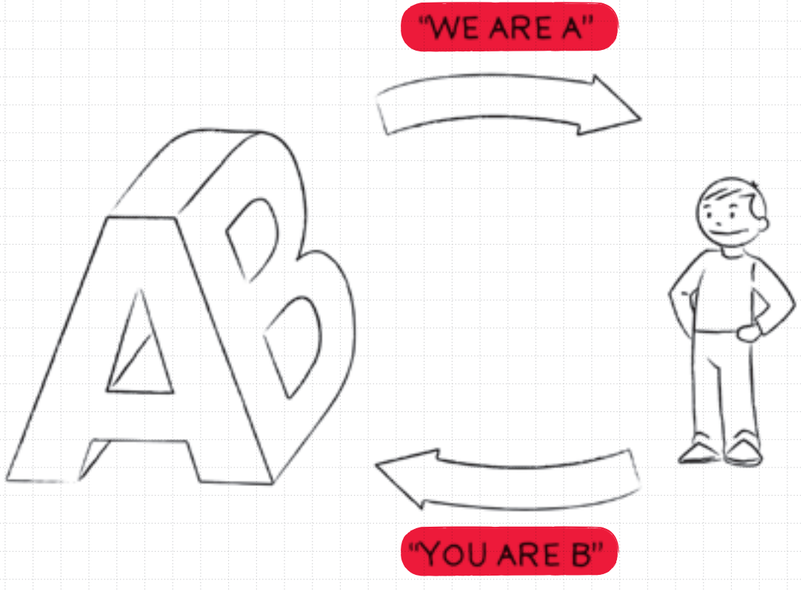
At Infonomia, we have been able to experiment with different types of new introductions, fusions between different creativities, and eclectic activities, in which people from different fields, from the arts, from science, and from business, share a passion to create and transform their project culture. And these meetings have produced connections between professionals that would not have happened in the vertical meetings they would have attended individually. By creating the right conditions for these intrepid people to mix, the *underground* and the *upperground* of society come together and develop mutual interests.

Conferences in which everything is planned prior to the event are also coming to an end; those where the principal mechanism of knowledge is that some know and others learn. Today we all know something. We are all intrepid. And it makes more sense to create places where we can all share what we know; where we can innovate, and where we can direct the reflections of a few to all the rest.

The future is *unconferences*[40]: social places designed for sharing, experimenting and connecting. The conferencial future is more like a meal with friends than a marquee packed with strangers.

21

Order is generated by searching



It is clear that a digital world cannot be organised in the same way as a library. In fact, this *disorder* (not everything has its place) can even be beneficial. Why not transmit information simultaneously to different places so that different people using different methods have the best possibility of finding it?

This is exactly what companies like Amazon are doing. One book can be catalogued in several categories and carry an infinite number of labels. The potential reader can find it (come across it) in many different ways. As an extreme example, if we look in "complete text", every word in the book is a potential label. The readers themselves, with their comments, can help to order the book in different ways (the user becomes a kind of editor).

This is one of the paradoxes revealed by David Weinberger in his book, *Everything is miscellaneous: The power of the new digital disorder*: the solution to the super-abundance of information is precisely more information. The more labels we put on specific information, the more ways we have of reaching it by an increased variety of routes.

The current excess of information might mean that we have to conclude that there is no natural order of information, and that there is nobody with the privilege and the power to organise it. It is the *unorganised* collaboration of many people labelling all types of information on the Internet that has generated a new kind of order (for example, a photo tagged in Flickr with different names can be found by different people looking for different things). Order emerges from the informal collaboration of millions of unorganised people (a new version of Adam Smith's *invisible hand*).

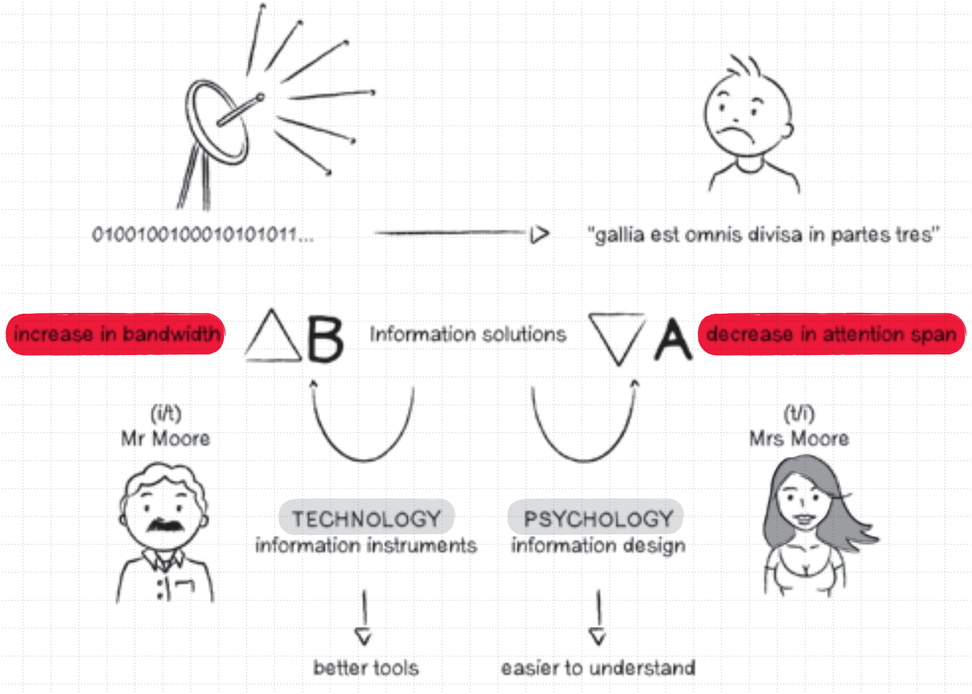
Some conclusions for companies: must we continue to believe that our products respond to a unique form of cataloguing, to which clients must adapt? (What Weinberger calls "essentialism" in business: this is what I do, this is what it's called, and you have to use it this way.) In fact, it doesn't matter how you present yourself to the market: you represent different things to different consumer groups. Your consumers become useful cataloguers of your product when they stipulate what they use it for, or even when they invent a new use for it.

Mass user participation in labelling information allows an order to emerge in the digital disorder (*the power of new digital disorder*). Anything can be classified in multiple ways: there is no natural order. There is not a place for each thing; each thing can be in multiple places at the same time. The more miscellaneous something is to organise, the easier it will be to find it.

In the digital world, order is generated when you search.

22

The paradox of an information society



While our technological ability to send more information in less time (i/t) is constantly improving, while generic bandwidth never stops growing, our attention capacity to absorb, not to mention understand, all the information we receive – in terms of the time we can dedicate to each thing we receive (t/i) – is decreasing. We have less and less time to absorb more and more information.

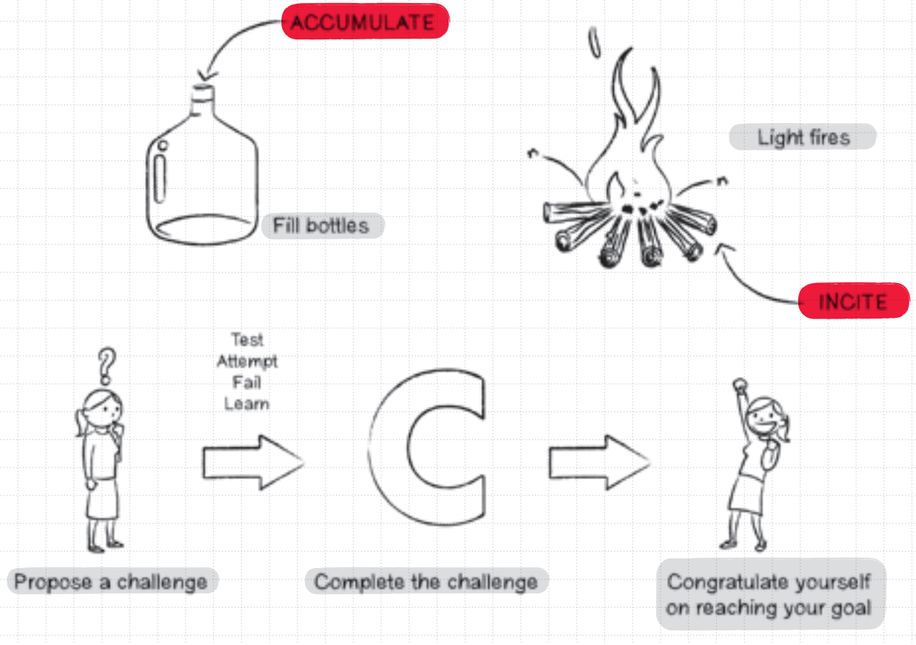
A curious situation is that it is now easier than ever to transmit large amounts of information, but the technology that makes this possible has evolved more rapidly than our capacity to absorb it all. Moore's law accelerates faster than the biological evolution of our brain (a situation that has been called *demi*-Moore's Law, or ½-Moore).

Faced with this paradox, we are fortunate that a *business of understanding* is now erupting, with a two-way information solution. On the one hand, technology that allows us to better manage the information bandwidth growth (ΔB), and on the other, psychology and learning systems that help the human brain absorb information more quickly and efficiently (to counter the decrease in attention span ∇A).

On the technology side, information instruments appear which aim to increase the time we can spend processing the flood of information (eg, Blackberry phones), like a kind of Martini ("any time, any place, anywhere") connection. Another example can be seen in ambient information technology, which transmits information without you having to stop what you are doing or search for it (non-intrusive information).

So we can follow the stock market simply by keeping an eye on the colour changes of a crystal ball.[41] Or we can use music as a form of non-intrusive information: when the visual cortex is full (from too much information per unit of time), why not use music as an information transmitter? Stressed-out workers pouring over a stock market table covered in tiny computer screens: suddenly, when their eyes can't take in any more, the *Sabre Dance* music plays to advise them that the shares of one particular company are rising.[42]

On the psychology side, we are dealing with information design, thinking of ways to present information so it is *easier to understand*, more intuitively and with less effort. For example, using a *visual thinking* model, information can be synthesised through *infographs* or other visual tools.[43]



23
Rethinking Socrates

With a blatant lack of modesty, I once came up with the motto "I unlearn, there fore I am". This is a daring statement because, according to the tradition we follow, learning seems to be an accumulative process, like building a house or paving a street. But current highly accelerated political, economic, technological and social dynamics mean we have to radically rethink how and what we learn.

The future of education and training depends mainly on understanding better:

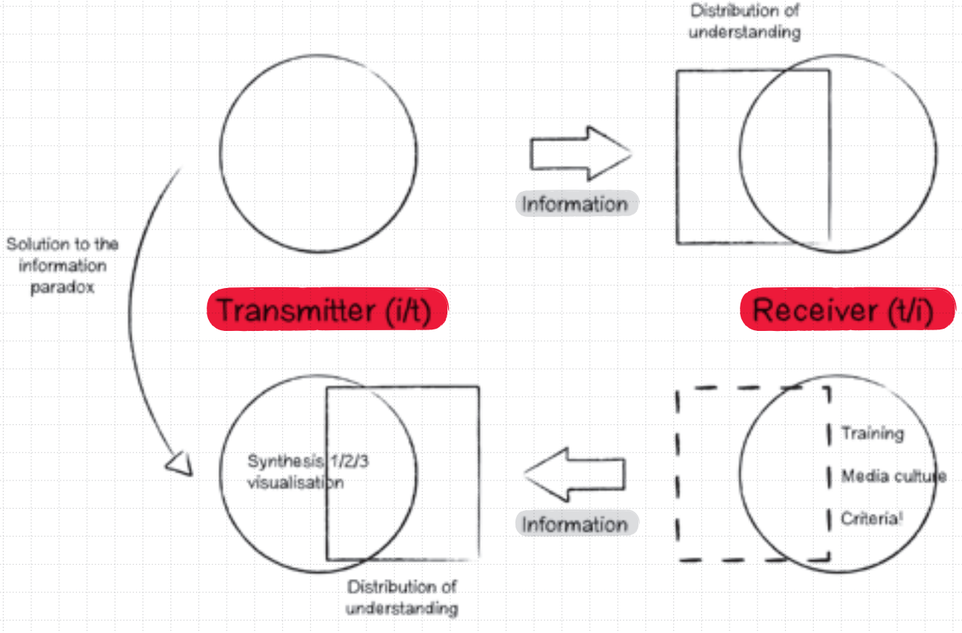
- When we have to learn: when is the synthesis between our need to learn and the learning opportunities around us at its best? In the current environment of permanent innovation, it is vital to connect the intelligent observation of our surroundings with learning. In other words, we cannot learn about things that have nothing to do with what's going on in the world. Every person in a company should be observing the outside world. And every person should stop explaining what they know and start sharing whatever they see and learn. Learning should be a part of everyday life. Of each and every day.

- Learning something from every occasion: do we learn the words or the *syntax*? Do we learn specific things or do we learn to connect ideas and facts in order to combine them and apply them? (Does training consist of filling bottles or lighting fires?) We don't learn anything if we don't want to. And we are more ready to learn when we can see the need. For this reason, we have to improve our techniques for determining what we should learn and when, which means that we have to link learning to a professional career (rethinking it in terms of a career in knowledge and experience, and not simply in terms of a career in responsibility).

- How we learn: it goes without saying that memory is important for learning (for the basic substratum of our knowledge, when what we learn remains deeply embedded), but we almost always learn something by doing it (and by getting it wrong). So how do we metabolise what we learn? How do we convert it into increased ability, and add it to our *mental capital*? In organisations everybody complains of having too much information, and the feeling goes that in reality, development consists of building up more and more information – so much that it is impossible to digest (Socrates was not just a content provider)[44].

We need to come up with new ideas for experiencing education. For example, brevity attracts us: learning something that can be explained on one page is very satisfactory. Images are not anecdotes: our potential to visualise information is not properly exploited. The *tempo* facilitates assimilation, like an educational diet: people need to take in the right amount of information and learning that they are capable of digesting[45]. *Experience* creates interest: professionals are always interested in what their company, their colleagues and their competitors are doing. Narratives are what convert experiences into emotions, and simulations bring us closer to reality: allowing us to learn by doing.

Changes in the distribution of understanding



The paradox of our information society[46] alerts us to the great information challenge of the next few years: we will have technology capable of sending more and more information per unit of time (*i*/*t*), but our brains will not be capable of assimilating it all, because it will be able to dedicate less and less time to each pulse of information (*t*/*i*). The limits of bandwidth tend to infinity, while the human attention span tends towards zero. This disparity requires a solution rooted in both extremes: technology (bandwidth) and psychology (attention span).

One possible answer is to modify the point in the communication process at which the distribution of understanding is produced. Every communications process basically consists of establishing a channel of information between a transmitter and a receiver. Traditionally, the duty of understanding, that is, whoever must make the effort to understand the message, was given to the receiver: it was the receiver who had to concentrate on understanding the message[47]. The receiver's responsibility to understand may seem obvious, and unavoidable, but it may not have to be that way.

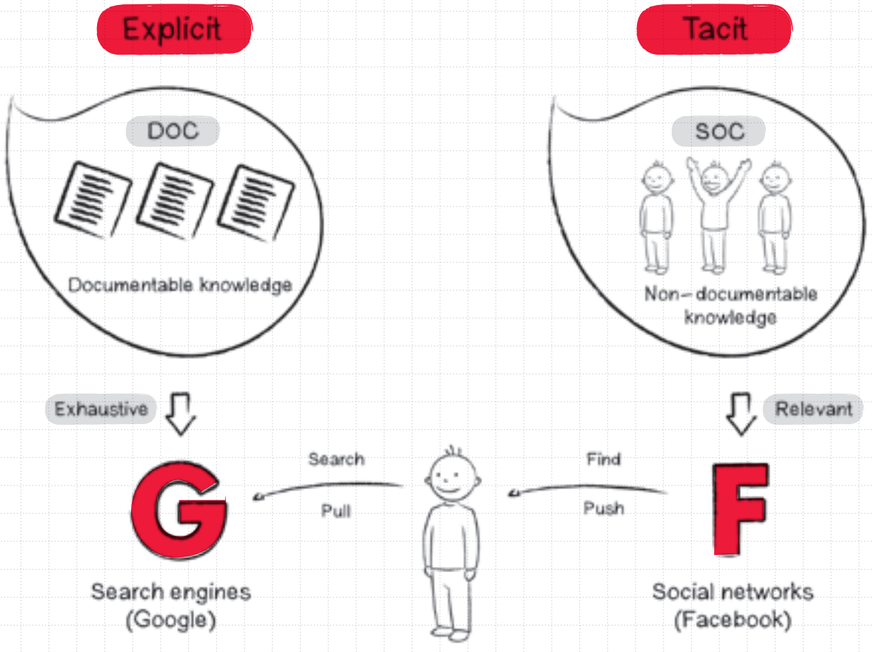
We could place the responsibility on the transmitter to send an understandable message, using instruments that reconstruct the message into more understandable parts (in the same way that newspapers organise text into headlines, sub-headlines, *boxes*, etc). or that the receiver is *trained* to understand the different formats a message can take, so as to interpret any message more easily (readers would have a better media *culture*, such as a better *visual culture*, so they were able to read a graph in a more complete format).

In conclusion, the current environment of excess information (what I called *infoxication*) demands specific training for the receiver, and an effort by the transmitter. The transmitter must make the message easy to understand, and the receiver must be better equipped to understand the message with less delay.

For the receiver, the challenge is in synthesising the nucleus of the message. For example, using a strategy of 1/2/3, to explain the message in three simple steps[48]. The use of images, of synthesis graphs, or infographs, can clearly be helpful in this context. But all this is worth nothing without an advance in the construction of a universal visual language, a global way of communicating with images, which will surpass linguistic differences and simplify communication between transmitters and receivers on a global scale. So far, this has only been achieved in specific cases and with limited use, such as the codes used in comics, or traffic signals. The visualisation of information promises to bring us a splendid future.

Exhaustive x relevant

25
Exhaustive x relevant



Today's Internet offers us a selection of truly fascinating search engines, which can find *everything* documented about anything in milliseconds. Obviously, the results bring up whatever has been documented by somebody, in some format (text, image, etc), that has been explored by the search engine (not part of the *deep web*, as it is known). The more structured the question, the better the result. If we look for a photo of a Ferrari, the search engines will give us access to hundreds of them. In this sense, the search engines provide an exhaustive search: *everything* that exists about something online. Google is the world paradigm of exhaustive information.

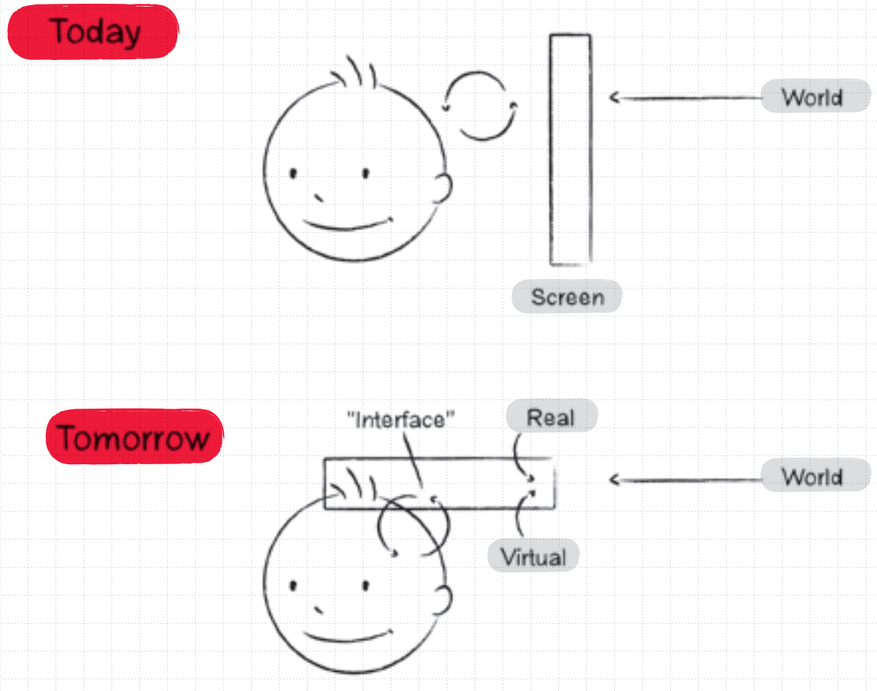
But not everything is solved by exhaustive searching. Humans function according to other information criteria, particularly relevance. We are more interested in finding the *best* information than *all* the information available. It is one thing to look for a photo of a Ferrari (a *structured* request), and another to find the *best* book on urban gardening (an *unstructured* request). The *best* criteria is obviously subjective, and search engines have to be backed up by human evaluations of web content, made via a selection of links. In this sense, the Google *pagerank* algorithm was a great advance, as it can *read* the relevance of a page according to its popularity, measured by the number of links in the rest of the net that mark the page as "interesting".

Google and all the other search engines are a fantastic tool for the organisation of explicit information, for knowledge that is documentable and codifiable in some format: text, image, graph, *software*, etc. The success of the search for explicit knowledge will be measurable by the relationship between how we look and how the information is organised. If the search is very structured, with no possibility of error (find a photo of a Ferrari), the result will be exhaustive and relevant. But an unstructured search (find the best) will be a search of tacit information, of knowledge that forms part of people's experience, accumulated through years of living and learning, and that has been *metabolised* in their minds and their lives. Learning to ride a bike is often used as an example of tacit knowledge: it is something you have to learn for yourself. There is no book that can teach you, you can only learn by doing it.

Social networks can be the missing link in the search for relevant information, because they allow us to locate and contact other people whose experience and knowledge could be useful for the transmission of knowledge that is non-documentable, nor convertible into explicit knowledge.

Just as search engines have created exhaustive searches by storing documents with explicit knowledge, so social networks can create relevant searches by establishing communication connecting the tacit knowledge of many people. By uniting the *G* of Google with *F* of Facebook, we can finally resolve the problem of how to find the exhaustive and relevant knowledge that we need, when we need it.

26
Interfaces and borders



Some years ago when the Internet was still getting started, I dared to say that my generation would one day see a world where the real would be merely an example of the virtual. My idea was that with advances in digital imagery, the time would come when we could no longer distinguish between a synthetic and a real image. Basically, it all depends on the number of polygons used to create the image and, at the present time, virtual reality can manipulate millions per second, which is sufficient to fool the human eye. We will soon begin to question reality, because doesn't the brain's direct experience of something make it real? Isn't a brain that is participating in a realistic virtual reality simply experiencing another type of reality, although more synthetic than natural? This will be a world where the words *real* and *virtual* no longer have the dichotomous sense (a clear separation) that we give them today.

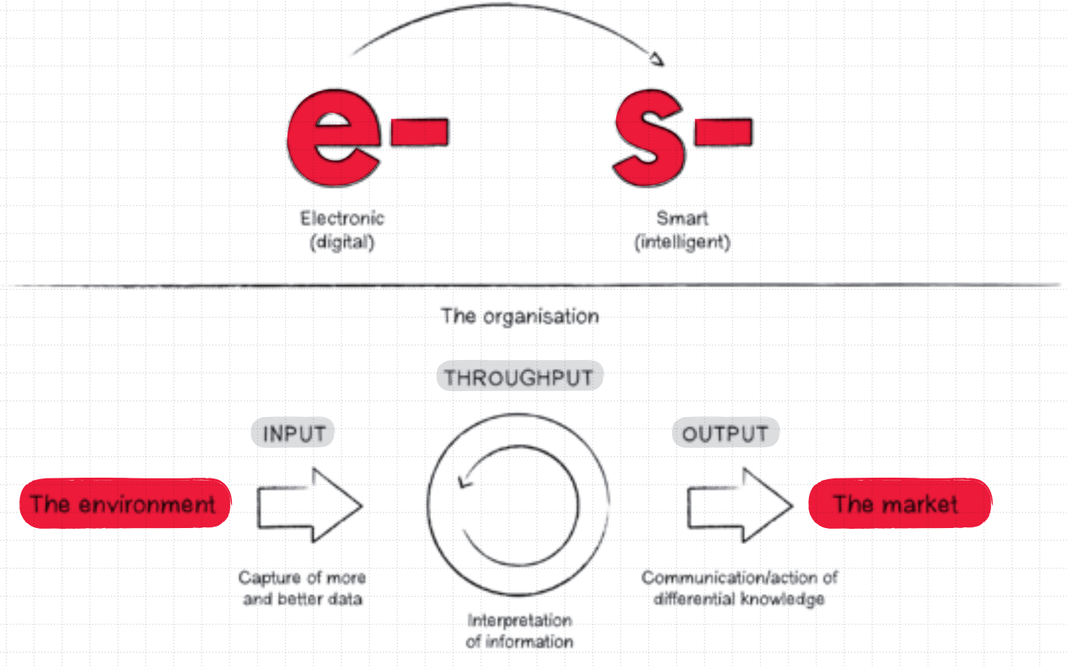
In this context, the whole universe of interfaces with which our brain must learn to play (mostly via the eyes, but also using the other senses) is of particular interest. Our children's future, if not our own, is plainly closely related to the screens and other *interfaces* that link us interactively with machines. These interfaces are still somewhat *stupid*, but they will learn to read us. They will develop from interfaces which rely on our orders to interfaces that are *sensitive* to our actions, and eventually, to our state of mind.

Steve Johnson wrote a fascinating study entitled *Interface Culture*, about how technology is transforming the ways in which we create and communicate[49]. He presented the grandness and misery of visual metaphors, the information technology paradigm, as a work desk metaphor (the *desktop* used by Windows as an information organiser, for example), or of Windows itself, which does not open windows to a better world, it just permits several work sessions to be open at the same time.

He also presented a very intelligent criticism of the *link* concept, and he compared it to the *trail*, already proposed by Vannevar Bush[50].

It is becoming clearer that in certain ways we are the relationship we have with the world, and that this relationship is produced through interfaces. And this relationship will change significantly in the coming years, as a result of the appearance of new technological possibilities. A world dominated by interfaces is imminent, in which generated images will help us to better manage information (efficiency) and will surprise us with aesthetics (emotion). The result might be that our eyes are better *trained* to capture the visual impact of the data flow around us.

S- (smart everything)



For more than a decade, the world has been taken over by the letter *e*: we have seen the eruption of *e-commerce, e-learning, e-government, e-everything*. We have digitised anything that is digitisable, and we have thought up countless new interfaces between humans and machines. But we have basically limited ourselves to automating routine tasks, and this is no longer enough.

For example, we have fantastic systems that manage complicated networks of traffic lights in cities, but what we now need are systems that can choose the right time to change a light to red or green, according to the traffic at the junction at that time. We need systems that increase our abilities; intelligent systems. And intuition tells us that the next letter to erupt will be *s*, for *smart*.

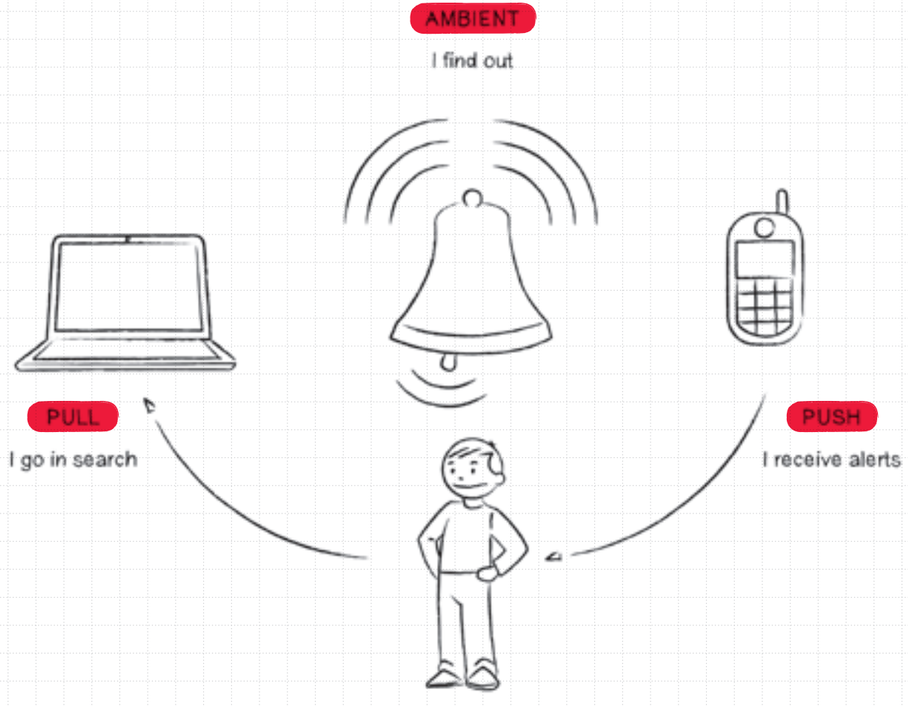
In organisations, this intelligence will show itself in three basic areas: the capture of the best information about our environment (seeing what others have missed), the transformation of this information into differential knowledge (how to exploit the information with regard to unique, original products and services), and communication of this knowledge to the world in the form of *solutions* perceived as value.

With regard to the capture of data, we will be living in a world that is bristling with sensors, all measuring an enormous amount of variables relating to both the physical world and to our behaviour. All this information can be integrated and connected, to transmit value to the user. The information also needs to be interpreted, using simulations and models (advanced mathematics and sophisticated algorithms), to provide a response to situations in real time[51].

These consequences will be activated both by humans who interpret them and machines programmed to respond automatically to determined situations. Machines that will gradually become capable of learning (to apply trial and error *feedback* processes, which, correctly monitored, will report back on which decisions have been correct). And finally, systems that communicate information intuitively, which will be of real value to the user[52].

We are going to see intelligence in the design of objects and processes (to generate maximum return with optimum investment of effort), in data capture (that can be interpreted to produce the information to act upon), in machines and systems that are capable of responding autonomously to the *stimuli* received (to information captured using algorithms based on well-established rules), and in user interfaces, so that users can easily use the systems available (in order to maximise the social return of the systems), and get a response both in real time and personalised to their needs.

All that we achieved in the 20th century must be rethought in the 21st, in terms of greater and better intelligence.



The *information paradox*[53] synthesises the growing tension between the quantity of information received per unit of time (which tends to infinity) and the quantity of time we are able to dedicate to each piece of information (which tends to zero). One strategy that can help dissolve the paradox consists of presenting the information we receive intuitively, so that the effort needed to capture it is minimal. It is neither intrusive nor distracts us from what we are doing. This means that the responsibility of understanding is placed on the user[54], and that this responsibility must be as light as possible. Ideally, the user doesn't have to stop what they are doing to capture the meaning of the information.

One way of informing without distracting is to develop *ambient information*, such as the instruments developed by AmbientDevices.[55] Their idea of value is based on interfaces that facilitate non-intrusive information retrieval – receiving information without having to stop whatever you are doing. While with the conventional *pull* model, it is we who voluntarily go in search of the information (on your computer, for example), and with the *push* model we receive the information because something or someone sends it to us (an alert to a mobile), with the *ambient* model, we are informed because we have perceived a change of state in a device conveniently located somewhere near us.

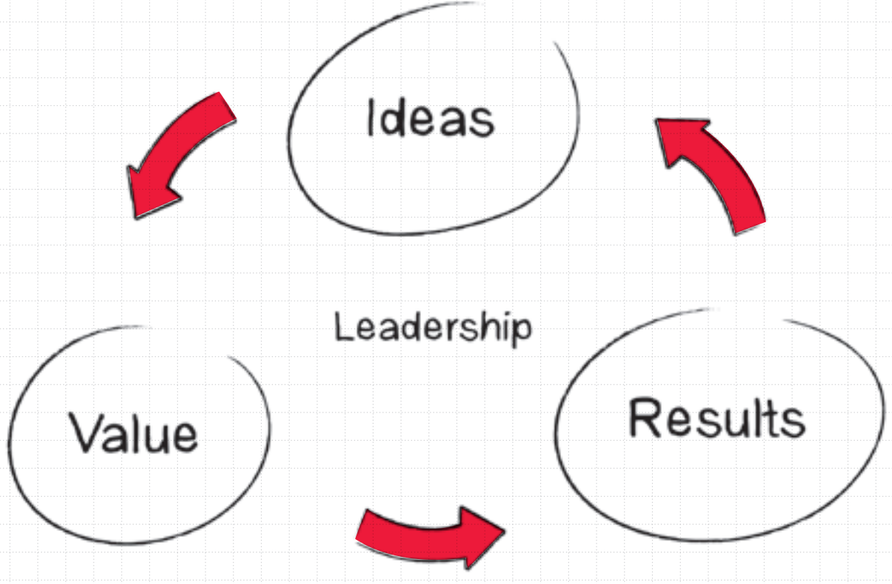
So, the light globe on your table changes colour to transmit information received, without you having to do anything. Or the handle of your umbrella illuminates when it wirelessly receives the weather forecast to remind you to pick it up on your way out. Or a windmill on your desk starts to turn when you receive a message, among hundreds of boring emails, from a particular person (*him* or *her*).

Ambient information is, therefore, a hybrid[56] of the *push* and *pull* models. A brilliant concept somewhere between searching and receiving.

In reality, it is nothing new. Church bells ring the hour so we don't have to find a clock; increased bustle in an office means that something important has happened. What's new is that we now have the technical tools available to inform us without distracting us. It would be useful, as you cross the hall in your house, to observe that the *display* on your electricity monitor shows red, meaning your electricity use is currently high. Or that a particularly rousing piece of music *playing* (such as *Cavalleria Rusticana*) warns a *stockbroker* in an office that certain shares have collapsed or soared. Because, when your eyes are unable to watch more screens or your fingers to type more words, you still have your ears to receive stimuli from changes around you.

inno

The innovation engine



29
The innovation engine

Innovation means generating ideas that somebody will perceive as valuable, which will produce sustainable results for all involved (economic profit or social profit). Innovation is a *three-stroke engine*: ideas/value/results, which must never stop. To make this possible, an organisation needs to have clear leadership that is dedicated to creating cooperation between the departments working to exploit the current market and those involved in the exploration of new business.

Innovation demands ideas, and these ideas are achieved both by motivating employees to present them (collaborative programmes), and watching what others are coming up with (*scout* or explorer programmes). In both cases, there are many methods and mechanisms to facilitate systematic production of team ideas (*brainstorming, watering holes*, hybridisation, deconstruction of essential factors, etc). One issue of innovation that can be difficult to understand is that the only way to have *good ideas* is to have *many ideas*[57].

Ideas must be converted into value. Ideas generated by a company are worth nothing if they are not analysed in terms of the value they can bring to somebody capable of utilising them. In this sense, innovation is what the market accepts (this is clearly what distinguishes *innovation* from *invention*, which generally comes from individual creativity). The *value factor analysis* is a substantial part of innovation. Before, value simply equalled function; today function is a necessary condition, but is not sufficient in itself. The style and the experience of using or living a proposal can be much more important as a perceived value than the thing itself.

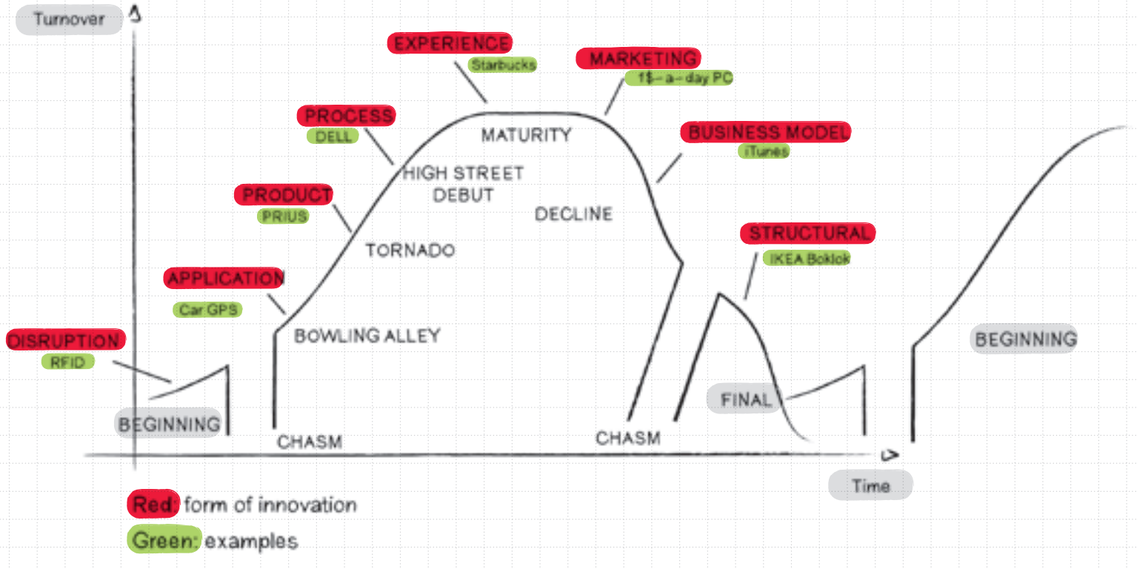
The ultimate objective of innovation is to generate results (that are sustainable over time). Innovation should be an instrument that generates positive economic results for a company, because these are imperative for the company's survival. And one fundamental element in achieving them is knowing how to manage the *payback* curve, the investment-results curve: the time invested in innovation, and the time needed to recover that investment.

The way to achieve a positive *payback* curve comes from choosing a model for the innovation system: integration, orchestration or licensing. In integration, the company manages the entire process vertically from beginning to end. In orchestration, the company has the idea, but coordinates *partners* from afar, who produce the product. In licensing, the company comes up with the idea, but hands over both production and marketing of the product to other parties[58].

Finally, the success of an innovation process depends greatly on the leadership of its management. There is no innovation without leadership.

A form of innovation for each stage of marketing

30
A form of innovation for each stage of marketing



A market tends to be born from disruptive innovation (such as the launch of mobile telephones). Every launch of a disruptive product brings a – usually small – wave of public enthusiasm (the *early adopters*). The rhythm of growth of these initial enthusiasts is what determines whether this disruptive innovation is only an *invention*, or a true innovation (in the sense that it creates a market that responds to it). This critical moment of all disruptive proposals is known as the *chasm*, when a number of enthusiasts demand that a product remains on the market, but the group never grows large enough to make it worth the company's while.

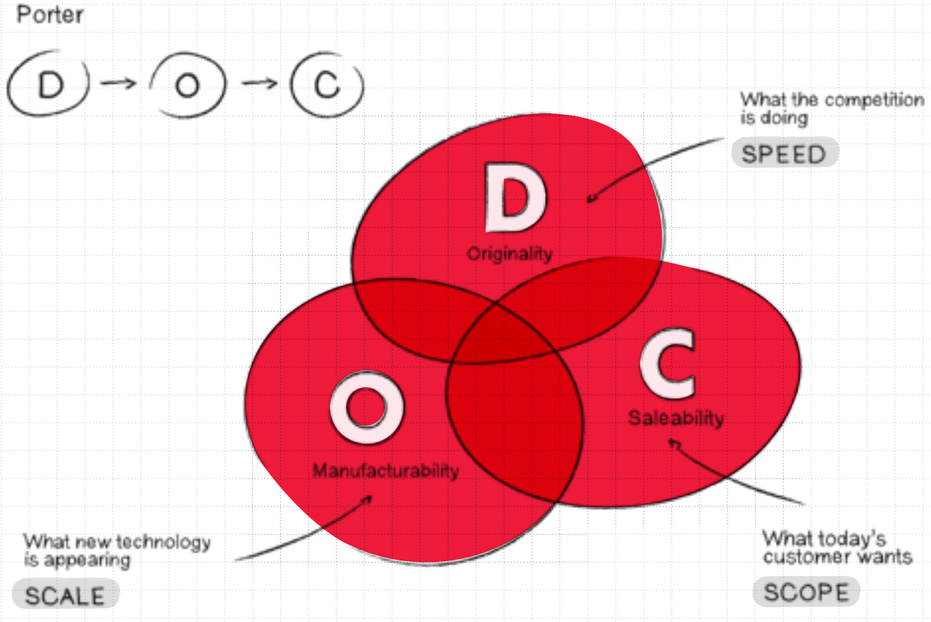
One way to resolve the problem of the *chasm* is by focussing the proposal on a specific application, a niche market. For example, GPS will end up being used in many areas of our lives (possibly in all our mobiles), but today their use is still concentrated in road travel (beginning with the taxi business). This is called the *bowling alley* strategy, meaning that if a technology fits into a niche, the knock-on effect can open another niche in the future[59].

If the *bowling alley* effect continues, it ends in a *tornado*, when the new proposal becomes an essential item to the general market, and gains *compulsory* status. The market explodes and competition becomes ferocious. Depending on the speed of the tornado, the proposal reaches ordinary citizens and the *high street*. This is when consumers expect the manufacture and applications of the product to improve, and the price to go down. Then the market matures and declines, and the moment arrives when a *breach* is created between what the company is selling and what the market demands (a fault line), finally the market cycle reaches the *end of its life*.

Each stage of a market's lifecycle has a specific form of innovation. A consumer IT company should understand that the tornado is over, and that computers are now a commoditised product (price is now the only discriminating factor), so that we need a new marketing innovation, but not of the product (as in IBM's PC), or the process (as Dell did with their direct sales scheme). Two of the most interesting innovations in today's mature market consist of selling computers at *a dollar a day*, offered by most banks, or better still, of selling them at extremely low prices (the *100 dollar PC* or the *netbook*).

In some markets innovation is possible with the introduction of a new product, as in the case of hybrid motor vehicles. In a market as mature as the café market, innovation cannot come from a new product (everything has already been invented), or from a new process, but from the creation of a new experience of the product (which Starbucks did very cleverly). Finally, in markets that are obviously in crisis, structural innovation is essential (something the property industry, for example, requires urgently, with ideas like Ikea's BoKlok concept)[60].

Innovation in the DOC intersection



Many of the organisations that excel in innovation that we at Infonomia have observed and documented have one characteristic in common: the innovation occurred in the intersection between their product and service design departments (thinking of the product), their operations and finance departments (making the product), and their marketing and communications departments (selling the product). The innovation is considered right from the beginning in terms of its originality (it is different), its manufacturability (it is makeable), and its saleability (it is sellable)[61].

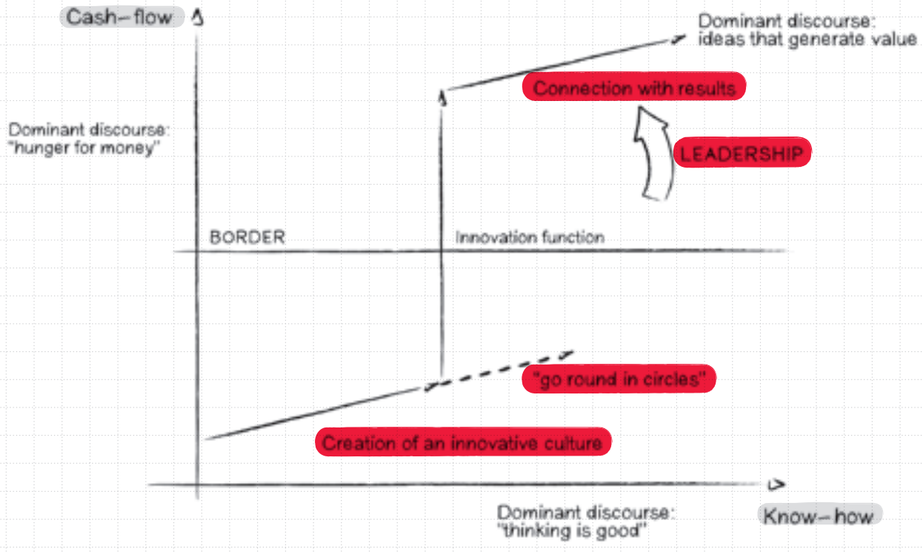
This method is more productive than the conventional linear method (as Porter discussed), that considered the chain of value as a succession of actions, each one starting where the last one ended. A product or service was designed, manufactured, distributed and finally sold. Today the linearity of the chain of value is obsolete, perhaps simply because there is no longer time to complete it. Product lifecycles are becoming shorter and shorter, as new technology appears that threatens to change drastically the way a product is manufactured or distributed, and the changes in the needs (pulse) of consumers are produced more quickly.

In this environment of competition and ever-quickening lifecycles, there is no time to spend on designing something that might not be manufacturable on a grand scale, or does not have guaranteed success on the market. At the *communal table* of design, operations and customer relations departments, the decision is considered from three angles: the product is *better* than that of the competition; it is *manufacturable* within the budget; and it will maintain client *interest*.

Thinking of the chain of value as a triangular value network makes sense. The function of each corner is to act as an interface with its environment. The design group has to detect what the competition is doing on a worldwide scale, in order to *beat* it. The operations group must be on the watch for new technology that might change the production or manufacture process and increase productivity or the applications of the product. And the customer relations group must follow the changes in market trends and tastes, in order to modify in real time the proposal that is being produced at the time[62].

However, this three-sided model is not viable if there is no obvious leadership able to manage the centrifugal tension of each group, because each point has its own language and motivations. The designers are plainly motivated by originality, and their work involves beating the competitors within this variable. Their fuel is *speed*; thinking of something new before the design teams from other companies do it. The operations team, on the other hand, are motivated by the manufacturability of the design, and producing it on a grand *scale* within budget. Their challenge is to make the product cheaply and easily to create the widest cost margin, and for this they must often manage entire chains of value from all around the world. Finally, the customer relations people are motivated by the need to respond to clients from a wide *scope* of values, which stretches from the functionability of the proposal to its richness of experience and communicability (it serves me, it enriches me, and I can communicate it to others to offer them value).

Converting know-how into cash-flow



Innovation consists of having ideas that are perceived as valuable and that generate sustainable results. It is a process of ideas to value: the conversion of *know-how* into *cash-flow*. A conversion of the knowledge (both tacit and explicit knowledge, from the imagination and from experience; of engineering and of methodology) that the people in the organisation have into positive numbers in today's accounts (or if they can wait for future results, in positive numbers in the balance of the company's intangible assets).

The main problem of innovation in organisations is that the conversion of *know-how* into *cash-flow* is not easy, because each field within the company speaks a different language. The principal difference is basically time: the *know-how* requires long periods of development, but *cash-flow* is subject to rapidly-turning cycles – getting from discussing innovation to converting innovation into results is not trivial.

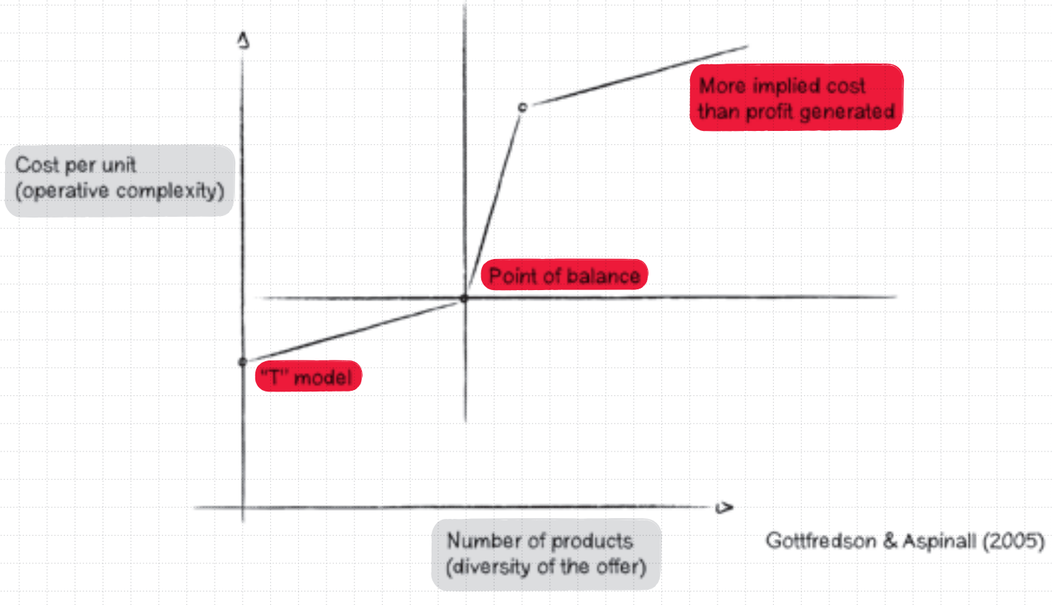
Establishing an innovation culture, a motivating atmosphere that stimulates people to come up with ideas, is relatively easy: people want to take part in the transformation of their organisation by creating new ideas that respond to new opportunities. But the problem remains, in most cases, of *how* the ideas generated reach the *owners* of the product, who come from the results division of the organisation, dominated by the principle of *cash-flow* (where employees are measured only by their short-term achievements). In *crossing the border*, the product owners, who decide whether there is an opportunity for innovation or not, are not usually particularly disposed to accepting proposals from areas of the company *not under their control*. We can say that this product *jealousy* (*not invented here*) often prevents the *cash-flow* division from accepting an exciting proposal from the *know-how* division.

Crossing this border needs a strong leadership influence. Those from *below* (*know-how*) can certainly make an effort to communicate more effectively, and make their proposals (their detected innovations) more visible. But it is essential that the leader demonstrate clearly to those *above* (*cash-flow*) that the ideas from below are valuable as a possible source of opportunities that will become future *cash-flow*.

There has always been innovation from above to below, from the organisation's official I+D laboratory to the chain of production. But now, thanks to technology that permits, at ridiculous cost, everybody in the organisation to take part, there is a new type of collaborative innovation, from below to above. This model has a third side, where clients participate in the design process of the solutions that are valuable to them. After all, that is a company's ultimate aim.

The evolution, therefore, is clear. From *closed* innovation (invented in the laboratory) to *collaborative* innovation (any member of the organisation can propose an idea), and from there to *open* innovation (the participation of outside parties who can bring value to the innovation process).

Reasonable limits to innovation



How do we manage, how do we select, the best ideas from such huge numbers? Companies complain when there are too few ideas, but they complain when there are too many as well. It is therefore fundamental to define the *right* amount of innovation in a company[63].

We need to find the balance between innovation and complexity. Gottfredson and Aspinall call this point of balance the *innovation fulcrum*, and they define it as the point at which the number of products or services creates a balance between customer satisfaction (sufficient variety on offer) and operative complexity (putting them on the market is not so complex that it eliminates profit).

This point of balance is the number of products that optimises both sales and profits. A higher number, and the complexity eats into profits; a lower number and the potential sales figures are not achieved because demand is not satisfied.

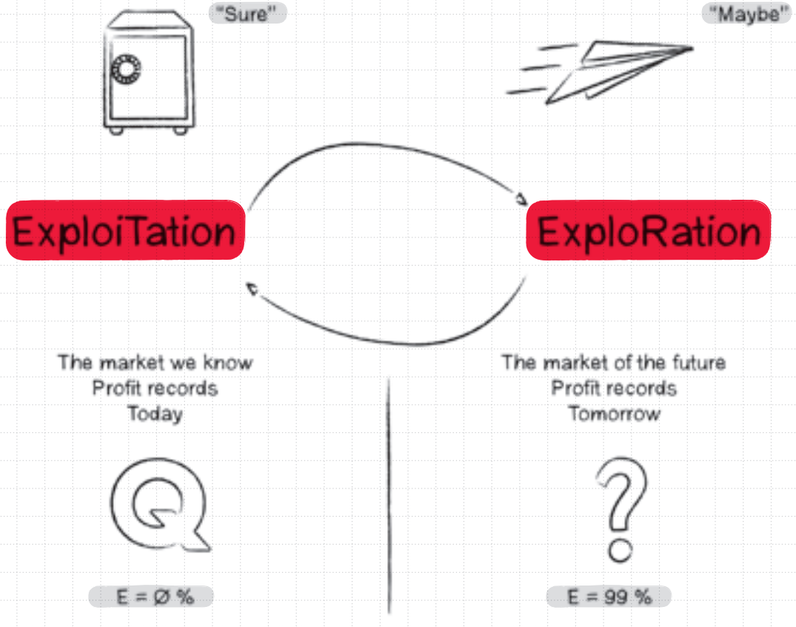
The current environment complicates the situation, because it is easier than ever to produce variety. In fact, customisation – heralded as one of the advantages of the digital age (client markets) – is now a feasible reality in many fields, though this creates an operative complexity on the side of the offer that does not necessarily mean better profits.

A clear example of this can be seen in banking, where the diversity of products and services available is so high that it is impossible to find an employee in the office who knows about all of them. In other words, the incorporation of more products means the company can offer more, but this has certain costs, in the form of increased complexity, which are not compensated (they are starting to produce a decline in resources). The key is therefore to find the *maximum* offer that generates *minimum* complexity.

The cited authors provide a simple yet potent solution, which they call the Model T analysis. It starts by assessing what is the minimum diversity of standard products you can offer for your business to make a profit (the Model T, at the birth of Ford, was the only model available). The next step is to add variety to the business system; to diversify the product catalogue, while measuring the impact that this diversification has on the costs of the value chains. When the analysis of this diversification-costs process shows that the additional costs surpass the generated profits, you have reached the point of innovation balance.

The conclusion is that a critical factor of innovation success consists of finding the right balance between the maximum amount of diversity for the customer and the minimum amount of operative complexity.

The exploit/explore dialectic



34
The exploit/explore dialectic

The modern company lives a profound dialectic between two almost contradictory necessities. In order to live today (to make money today), the company has to *exploit* the ideas that it developed some time ago, and has already successfully converted into products and services. But in order to live tomorrow (to make money in the future), it must *explore* new ideas and opportunities.

Good management of the tension between exploitation and exploration, in the combination of strategies and structures, resources, processes, and people, in both directions, is the trick to surviving in a competitive environment that demands simultaneous efficiency (productivity) and difference (innovation). There is tension and dialectic between mature ideas and the exploration of new ideas because the characteristics that make each aspect work well are very different.

In exploitation, the objective is to function through a routine with no room for error. All procedures and processes must be perfectly defined, so that everybody can carry out their job well. This is where quality reigns. Mistakes are not welcome, and people are evaluated on the economic results they produce by doing things well (perfectly).

In exploration, the main aim is to seek out the free and original generation of ideas. As Linus Pauling said, the only way to have good ideas is to have many ideas. According to some experts[64], the typical percentage of the sum of a company's ideas that finally end up working is only 0.3%. Innovation is a desire for constant experimentation; an adventure waiting to be discovered. A passion. The exploiters' work is totally focussed on short-term profits, while the explorers are focussed on discovery, without being sure that this will affect future profits. To put it in simple but graphic terms, the exploiters have their feet on the ground, and the explorers have their heads in the clouds.

The dialectic between these two extremes is complex, because the company needs them both. It is not possible to survive today without uniting the efficiency of the exploitation of mature ideas with the bold generation of new ideas, concepts, products and industries, that can be managed in a global environment of accelerated copy. The company needs both poles, but the poles are incredibly different, as are the people that work in them, the motivations that stimulate them, and their methods of evaluating success (economic results in one and ground-breaking ideas in the other).

Perhaps achieving a balance, a good relationship, between these extremes is the principal function of the company directors. Their job is to make both poles understand that they are two sides of one coin, and that they need each other: one cannot exist without the other. Perhaps they could ensure that each person spends some of every day working as both an exploiter of mature ideas and an explorer of new ideas.

Open innovation

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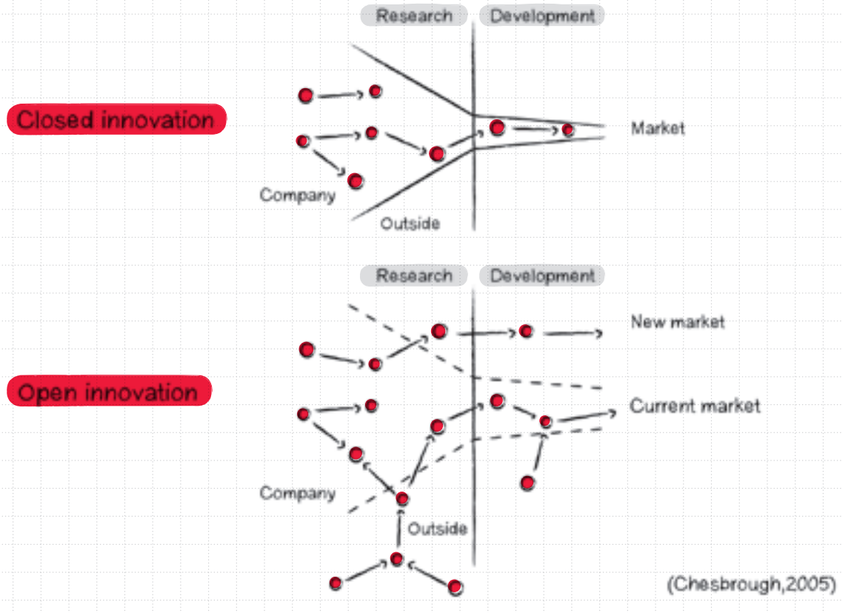
Open innovation

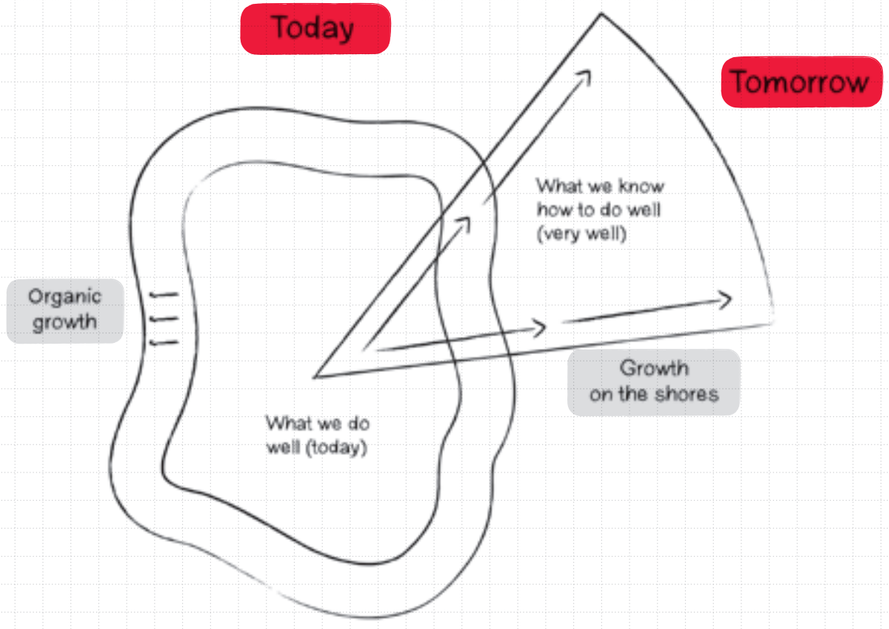


Procter & Gamble (P&G) surprised the innovation world, some years ago, with their idea of C&D (*connect and develop*). The main concept was simple: instead of continuing the *not invented here* fantasy (according to which anything invented outside *our* laboratories is not good), it was more profitable (cheaper and more efficient) for P&G to look for solutions to their problems on external talent markets. This is possible because of the high number of qualified people, specialist professionals distributed throughout the world, capable of overcoming a challenge using a cheaper and more effective method than the traditional method of internal I+D laboratories[65].

The key to this method is three-pronged. First, we must establish what the problem or the opportunity we want to attack consists of (*briefing*). Second, we have to make the most of the extended company (*partners*, providers, small companies, universities, brilliant individuals, etc), spread all over the world, in order to find whoever has the best knowledge to tackle the issue. Third, the contributions of *partners* should be circulated internally, to select the best and most relevant to the moment (it is said that from every 100 ideas generated in this way, only one will reach the market), and presented to the owners of the organisation's product lines. Given that in order to respond to growing challenges, companies need to accelerate innovation, to guarantee high levels of business growth they must find complementary forms of innovation to add to the motivation of internal teams. Faced with the closed innovation model, which sees everything invented within the organisation, the model of open innovation proposes innovation through relations built outside the organisation[66].

To find solutions outside the company, P&G approached their providers, a network of technological entrepreneurs or explorers, *scouts* (idea hunters, working *freelance* or in small companies, from all over the world), as well as innovation markets[67], places where thousands of professional *solvers* are available to offer answers to those searching for solutions (the *seekers*).

Finally, P&G developed ways of stimulating the culture of open innovation, in addition to an environment of search and exploitation of the new, with a suitable mechanism of recognition and retribution.



One of the main challenges for organisations in the coming years will be understanding that the question "what do we do well?" is totally irrelevant. It does not matter what you are doing now, nor what excellent product or service you are providing, because your excellent ability could suddenly be brought into question at any moment and from any corner of the world. Today you might be the best lamp manufacturer, but as suddenly as tomorrow somebody might appear in a remote part of China or Korea who can do it better than you. So the question of real relevance should be, "what do we know how to do well?" Because what is important is not what we do today, but what we will know how to do in the near future. This is a question that requires deeper analysis, and which is not easy to answer.

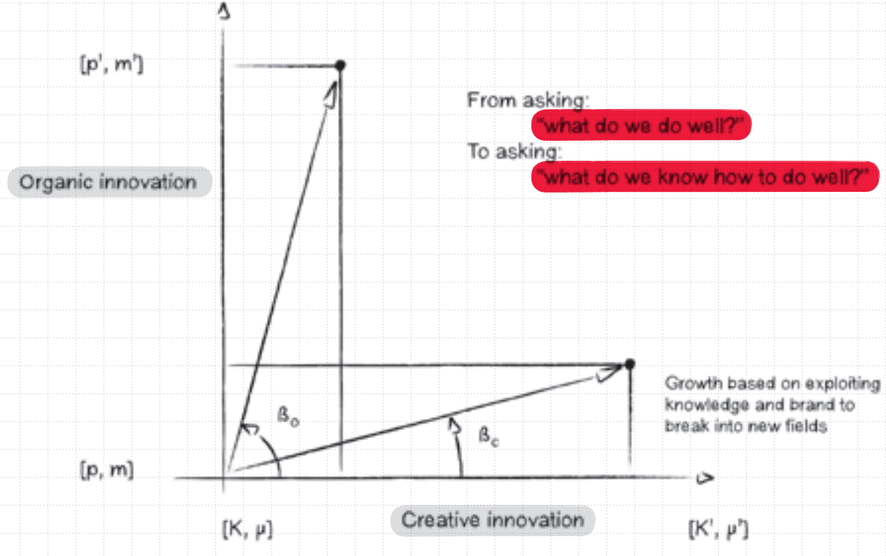
Some examples might help to explain: Dainese[68] is an Italian manufacturer of motorcycle clothing and accessories, making leather and fabric suits for people who spend hours on a motorbike. Now the company has discovered that some of the knowledge gained from making resistant clothing, helmets, and protective *armour* can be applied to other fields, such as skiing. If this company concentrated only on "making clothing for motorcyclists", it would miss the opportunity that comes from understanding that "we can make protective clothing for extreme sports", a completely separate business.

Another interesting example is provided by Santa & Cole[69]. Known for its interior lighting, the company also began a successful line in urban furnishings (benches, outside lighting, etc). It then launched a new division that at first seems surprising: a forestry division. Now its catalogue contains trees offered not as garden products but as urban design. The *knowledge* of how to humanise a city with design elements allowed it to approach the local council department responsible for buying with a proposal that trees are actually a part of urban design. The experience evident in its proposal on how to make a city more habitable, pleasant and satisfactory, gave it the expert authority to propose an integral system of urbanisation (furnishings + trees).

One last example: the Swedish company Stokke[70], the creator of an *instant classic*, the TrippTrapp children's seat, whose selling point is that it "grows with the child", has now applied the same concept to the Xplory, a children's pushchair (a product that is far removed from furniture). Exploring unknown business shores, that is to say the areas that are not exactly what you do today, but fall within the boundaries of what you could do tomorrow in accordance with your differential knowledge, becomes an interesting way to make the most of business opportunities in the coming years.

Linear business combinations

37
Linear business combinations



A company is usually made up of a series of business divisions that are generally *product-market pairs* [p,m]. So a bank might have a mortgage division (product) for immigrants (market), or a credit division (product) for self-employed people (market). These are two paired divisions among many others: [mortgages *for* immigrants] and [credit *for* self-employed people]. Taking these pairs as starting points, companies usually "progress" in two directions.

First, from pre-existing pairs [p,m] of products and markets, new pairs [p',m'] are thought up of new products for new markets (what is well-known in marketing as the *Ansoff matrix*). For example, in the case of a bank, the credit division can come up with a form of credit (a new product) for students (a new market). And in reality, on its way to this end, it might also find new markets for a specific product [p,m'], or new products for a specific market [p',m].

And second, starting with the current pairs [p,m], the *differential* knowledge of the organisation can be investigated and the *know-how* exploited in different directions. This knowledge should then be synthesised into *knowledge and brand pairs* [k,μ]. A toy company that knows about family needs (knowledge of the market) and that is respected within that market (a recognised brand) can offer many new products and services that extend far beyond their current portfolio. For example, they might come up with a new concept of family holidays.

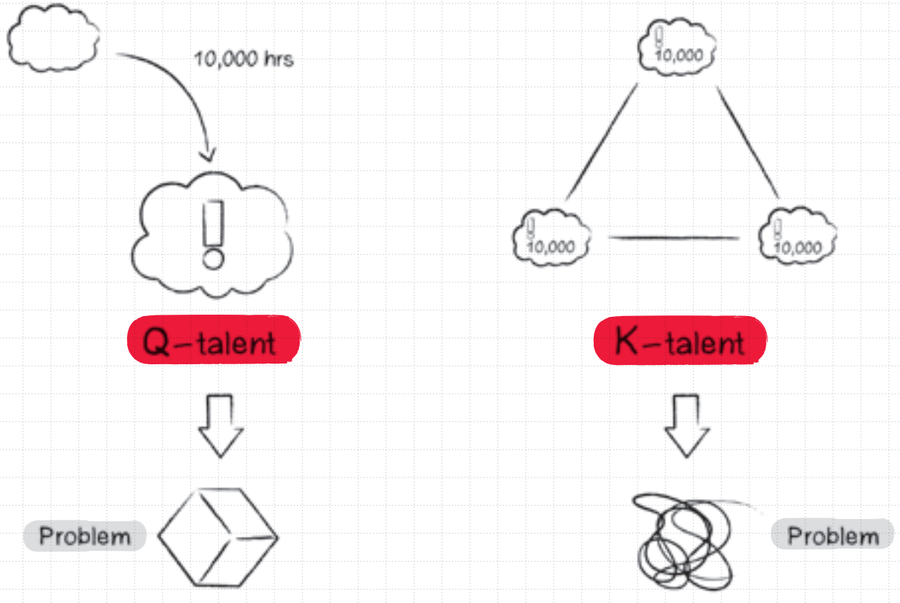
This means that a company can experience growth in two directions simultaneously: *exploitation* of new product-markets, and *exploration* of knowledge-brands; that is, the maximum development of what it already knows, and the discovery of what it can do, by applying the *activating factors* of experience and brand. And if it wants to remain consistent to this idea, the fundamental question to ask is not "what do we do well?" but "what do we know how to do well?", which is not the same at all. The first is a result of the past ("we do this well because we've been doing it for years, and because the company has always done it this way"). But the second defines the organisation's future story ("we will do this because we are capable of doing it, and because it improves our competitive situation in the market"). The growth in exploitation comes from optimising the organisation's *past*, and the growth in exploration is founded in the design of the organisation's *future*.

Finally, the Ð angle measures the specific linear combination of *organic* growth (new product-markets) and *creative* growth (new knowledge-market) that the company defines as its strategic equation. The intelligent management of this Ð angle will be one of the main functions of company direction in organisations in the next few decades. Knowing how to find the most appropriate combination (how much exploitation and how much exploration) for our organisation and our market will be of crucial importance.

ideas

Quality (*Q*) or quantity (*k*) of talent

38
Quality (*Q*) or quantity (*k*) of talent



Malcolm Gladwell[71] has warned us of the importance of genius in our economic future. More specifically, he warns of just how much talent we are going to need to solve the increasingly complex problems we will face.

He voices his warning with the comparison of individual talents: Michael Ventris, who deciphered the Mycenaean Linear B language[72] in the fifties, and the collective talent of Andrew Wiles, who at the end of the nineties demonstrated Fermat's last theorem[73]. Both problems were considered intellectual challenges worthy of great minds; hundreds had tried previously to solve them and failed.

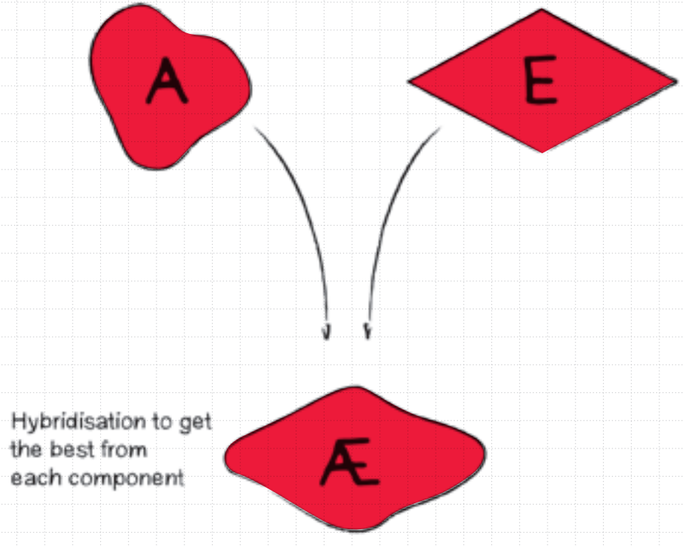
The peculiarities of the Linear B language make it an inextricable puzzle. Ventris dedicated evenings and weekends for years to deciphering the tangled knot of the language. He is a great example of the kind of talent typical of the 20th century: a particularly gifted individual, shut away in self-isolation with no more than pen and paper, and his mind. A brilliant brain, which regardless of previous accomplishments (in this case, seemingly, nothing very significant), persists, resists and triumphs. Quality of talent (*Q*).

To solve Fermat's theorem, a mathematical reef that claimed the life of many a genius, Wiles followed in a similar vein: obsession that became seclusion (also lasting several years). But in contrast to Ventris, Wiles had to base his study on a series of previous works completed by other mathematicians, who had proposed that by demonstrating one factor another would be proved, which in turn demonstrated yet another, and this would finally lead to the solution of Fermat's theorem. Quantity of talent (*k*)

Wiles, says Gladwell, illustrates the type of talent that will be typical of the 21st century: *collaborative talent.* Ventris is an example of *quality genius* (*Q*: a great mind that battles alone against a huge mental challenge), while Wiles is an example of *quantity genius* (*k:* somebody who connects the work of various talented minds and *combines* them to reach a final solution to the problem).

The relevance here is that the problems we will face in the future will require a collective approximation like that of Wiles, because they will be so complex that no single mind will be capable of solving them. Many of today's problems already require the combination of several experts, all of whom have dedicated some 10,000 hours of their lives to applying their mastery to a specific area of the problem[74]. If we add up the 10,000 hours that each expert spent on the collaborative project, whether formally or informally organised, the sum is an overwhelming *quantity of quality time* (*kQ*).

According to Gladwell, the quantity of genius (talent) (*k* for *kilo*) will be more important than the quality of genius (*Q* for *qualitas*). And it will be absolutely fundamental to connect with shared talent, with the *free radicals* that work in isolation at different points of the globe. What is important is the multiplication *kQ*, not the individual components.



39
Hybrids

It is easier to create new products or services with the combination, or hybridisation, of pre-existing ones, than to try to imagine breakthrough concepts. The idea is not new at all. In fact, I recall that Paul Romer commented that the future would come from a "combinatory" of ideas, of mixing components to generate new things.

The hybridisation of products, technologies and business models will probably be fundamental for the West, if we want to survive the *Asiatic wave*. In particular, our economic survival will depend on our ability to invent new categories of products and services directly from the basic sciences.

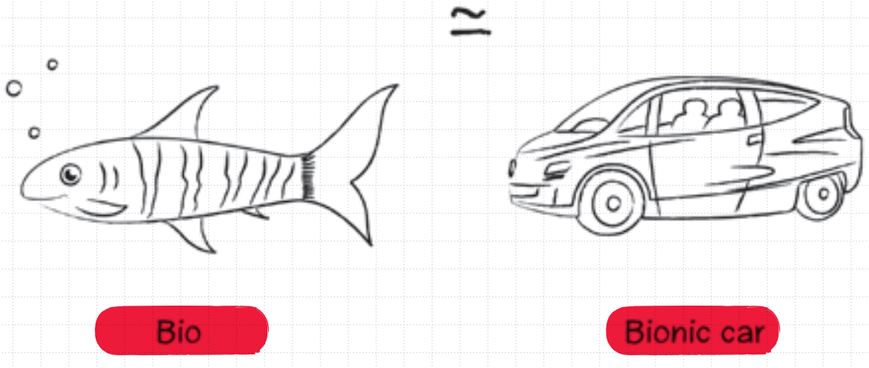
New ideas with great potential emerge from the connections between apparently different disciplines. Proof that this phenomenon of the hybridisation of fields and disciplines is already happening can be found in the annual selection of the most promising under 35s in technology by MIT's *Technology Review*. We can read about what they are studying, but we won't understand a word of it, because most of them are involved in new fields of knowledge that have been fused from already existing areas.

Hybridisation is a recognised innovation method, systematically used in industries such as the car industry. Many of the vehicles on the market come from a combination of previous examples: a car that is nearly a motorcycle (the Smart car) or a motorcycle that is nearly a car (the BMW C1); the combination of car and van (a people carrier); car and tractor (a four-wheel drive); four-wheel drive and motorbike (a quad bike); four-wheel drive and tank (the Hummer); a road car and Formula 1 car (a Tramontana), etc.

We are surrounded by examples of hybrid products and services. And often, the hybridisation is not of products but of concepts. Hotel rooms for frequent guests, who turn them into a home for a few days every week (the *extended hotel* concept). The combination of ideas from the past and the future to create concepts for the present (used by Maserati to design its vehicles); the fusion of the best of low cost with the best of high value (the Japanese airline StarFlyer has done this with great success, following in the footsteps of pioneers such as Ikea and Muji); the combination of a university and a cruise liner (Scholarship)[75]. Hybridisation of a computer and a book, the TabletPC. Of a telephone aerial and a satellite – a Stratellite – an aerial on a balloon or a zeppelin. Of an actual and virtual assistant, a *verbot*, intelligent software that listens to your question and answers almost like a human. Of private and public transport, *car sharing*[76].

To make hybridisation possible in organisations, there is a crucial element: people whose interests span more than one field. People with a foot in each discipline, who know and are respected in both areas. These are the people who provide the *glue*, whose ability is to build bridges between distinct disciplines.

40
Twinning



In the summer of 1854, a cholera epidemic hit a district of London. The middle-class *establishment* of the time insisted that the cause was bad air quality – the harmful effect of miasmas. But it took the stubbornness of a scientist, who mapped information collected during the epidemic (who had died, where and when) to reach the conclusion that its origin was from fetid water contaminating the city's wells, not the bad smell in the air.

It was the fusion, the combination, the fertilisation of ideas, from people with different knowledge, that made it possible to give an explanation that challenged and discredited the official version of the miasmas as the cause of the epidemic. From the combination of two fields of knowledge comes something more than the sum[77].

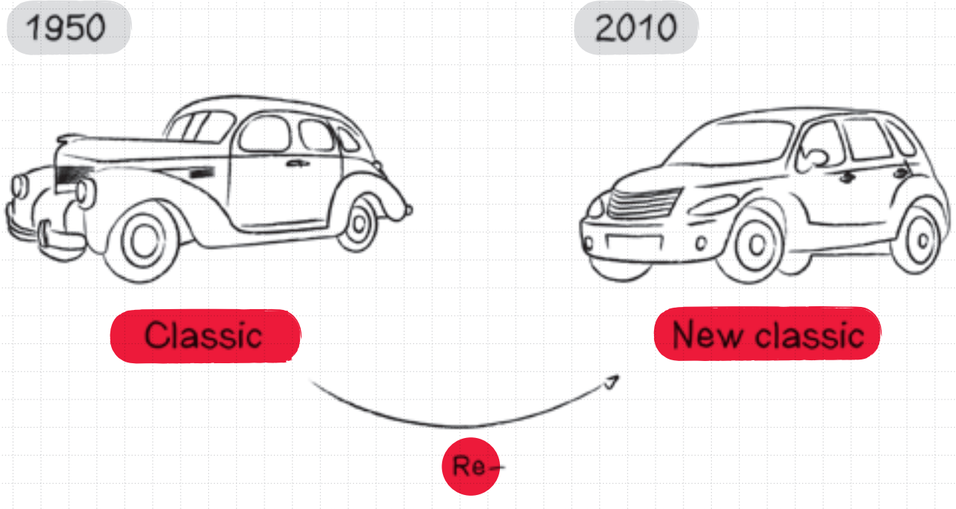
The *twinning* of knowledge is the meeting of different ideas, people, or companies, to generate a value that could not be created from a single component. From observing the behaviour of bees, ants, and other large groups of animals, we can deduce principles about the creation of order and efficiency from basic rules, which can be applied to specific logistical human problems.

Maybe an architectural study in London[78] proposes the construction of 200 new cities with 1.5 million inhabitants in the next 20 years (300 million people would emigrate from the country to the city), which would be sustainable and energy self-sufficient, owing to organisation by a multidisciplinary team of architects, engineers, experts in alternative energy, ecologists, etc. Or a brilliant physicist invents a new kind of musical instrument, half *hardware*, half *software*, a table that composes sounds by moving pieces that meet as if by magic, the result of combining knowledge from physics, engineering, IT and music[79]. Or a doctor, inspired by nature and backed by 3D design systems (biology plus engineering), finds the biomimetic solution to problems in human dental structure, and converts it into a patented product all over the world[80].

The future will not be easy. It will not be a future of plain textiles, but of *technical textiles*, and *medical textiles*, and *health textiles*. Not a future of plain toys, but *ecodesign* toys, that save energy, that transmit values, or that re-educate children in the joys of playing with their hands, building, imagining, creating.

The economic energy of the coming years will come from hybrid companies (1+1=3 or 1+1=1,000, depending on how we do the sum); from dissolving the boundaries between industries, and from reducing the distance between dreams and reality. To achieve this, we will have to create the right conditions, platforms, circumstances, and networks, that allow different knowledge combinations to meet and mix.

41
Retroinnovation



Retroinnovation consists of looking back in time to find the inspiration to rethink today's products and services. One industry that frequently uses this technique is the automobile industry: there are cars on the streets today with the rounded form of fifties' cars, for example, the Volkswagen Beetle, the Chrysler PT Cruiser, the Nissan Micra and the new Fiat 500.

I don't know how much this is because we have exhausted current visions and the industry is seeking inspiration where it can, or if there are underlying psychological reasons that are guiding the industry to return to a time when people had a *closer* relationship with products. Times when we used to *feel* more for things, perhaps because we had fewer of them; we weren't surrounded by excess, and we valued our possessions more.

Maybe there really is a *conservative revolution* underway. Or, if I can be more apocalyptic, a new Middle Age is imminent, as suggested by Umberto Eco. A new time in which we have to return to our origins, to our relationship with the world and with things. To an intimacy that protects us from the whirlwind of the unknown. Or maybe, the brand strategists have simply run out of neurons.

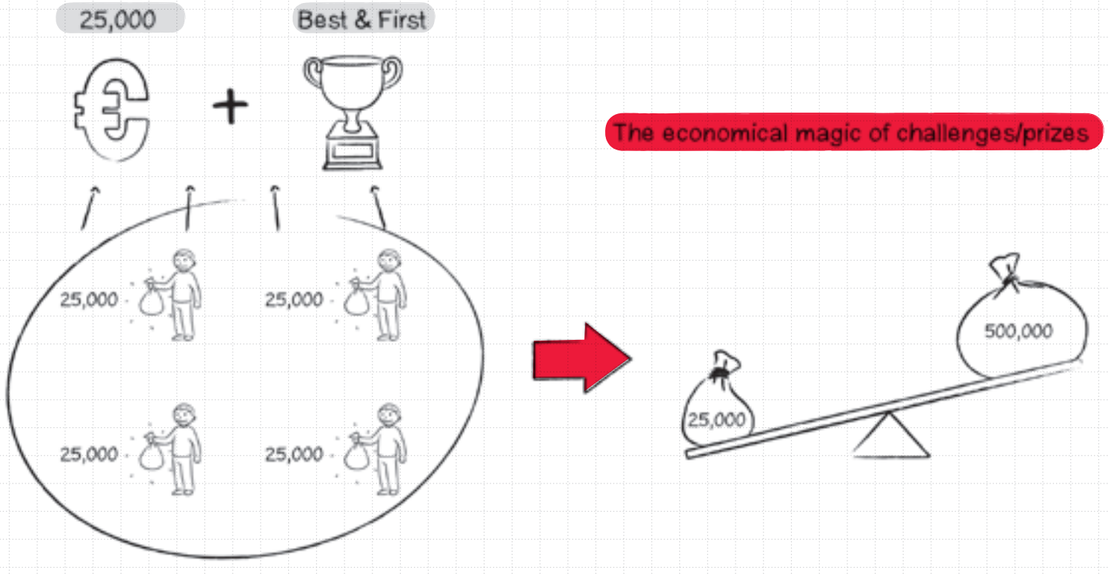
I believe it is possible to renew our attitude to enterprise without resorting to the aesthetic of nostalgia. We have to place our bets decisively on the future. To think ahead, to be bold, to be visionary. We have to fly, and we have to dream.

Much of this will, of course, be designer. But not the purely cosmetic design (based on appearances) that many suggest, instead it will be design that allows us to think of the future and make better things. Design that pushes us forward, and is supported by new ideas: by science, by the technology that breaks formats and rules. With an audacity that allows us to see the world as we used to see it as children. To define new stories of reality, to change our relationship with the excess around us, and to turn it to our advantage. To be unique amid the mediocrity of abundance.

Is the redesign of the past no more than steam, or can we take explanations from history to write new stories that project people towards new adventures in the future? Among many significant faults, our society is characterised by the worship of the trivial and the immediate. For the pleasure of instantaneous personal reward, or *X Factor*-style attention. But when we look into the past and discover whom we should thank for where we are today, what we find is a stock of stories about resistance, perseverance, and stubbornness, more common than seems humanly possible. We need to learn about this history, and maybe then we will understand the trick, at last, of simply being genuine. Of believing in what we do, and reducing our levels of necessity to what is humanly normal.

Perhaps brilliant minds will become millionaires, but in the end we realise that real *success* could be as simple as being able to look in the mirror every morning and recognise the person who looks back.

Reward as an engine of disruption



In 1714, the British Parliament offered a prize to the person who could discover a reliable way to determine longitude (the angular distance to a meridian of reference, such as Greenwich): £10,000 for a method of finding longitude accurate to within 1° (which would rise to £15,000 if accuracy were to within 40 minutes, and £20,000 if it were to within 0.5°, that is, 30 minutes). This was not achieved until 1761, when John Harrison built an accurate clock that could measure longitude to an accuracy of within 0.5°.

A few years later it was the turn of railway. The first line was laid in 1825 between the English industrial cities of Stockton and Darlington (24 miles long), and was proposed and built by George Stephenson. It began the railway revolution, which initiated the industrial transformation of the West. The promoters of the future line between Manchester and Liverpool offered a sum of £500 (a large amount in those days) to the person who could build a locomotive "that could pull three times its own weight for a distance of forty times one mile and two thirds" (almost 70 miles). The prize was won by George Stephenson, in 1829, with his engine the *Rocket*.

In 1919, the Orteig prize promised $25,000 to the first person or persons to cross the Atlantic in an aeroplane. The feat was achieved by Charles Lindburgh, flying solo, with his plane *the Spirit of St Louis* in 1927. This demonstration of the utility of aeroplanes and transoceanic transport (until then reserved for ships and zeppelins) initiated the commercial aviation boom.

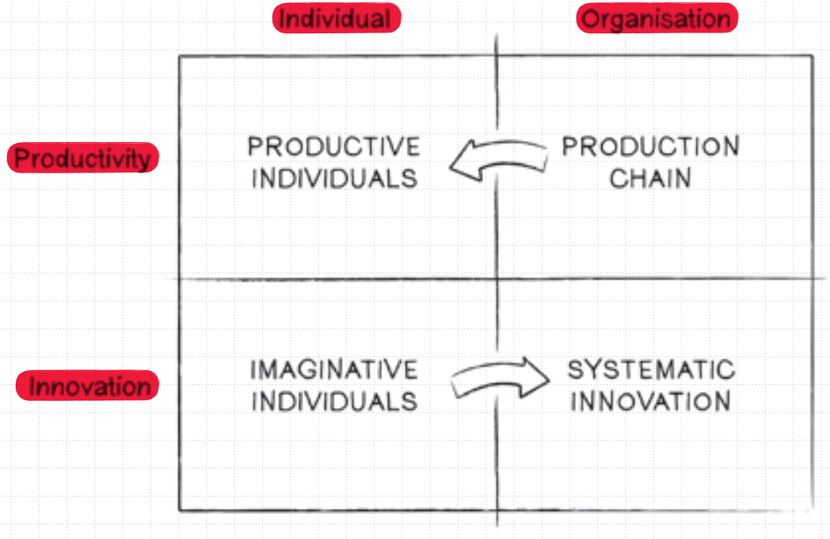
Most of these prize-motivated innovations demonstrate how a (limited) amount of money stimulates much larger investment. For example, it is estimated that of the $25,000 awarded by the Orteig prize, nine different teams invested more than $40,000 between them, which proves the influence a cash reward can have.

In 1996, inspired by the Orteig, entrepreneur Peter Diamandis came up with the *X Prize*: $10 million for the first private initiative that could fly a piloted ship to a height of 100km (which is the boundary with space, as defined by the International Aeronautics Federation), carrying a weight equivalent to three people, twice consecutively within a period of 15 days. Twenty-six teams responded to the challenge, which was achieved on 4th October 2004 by the company Scale Composites with their ship *SpaceShipOne*. A few days later, Sir Richard Branson walked into the company's headquarters and Virgin Galactic was born, and with it the space tourism industry.

Today, many innovation schemes are based on the motivation of the challenge/prize model. Its success suggests that maybe we ought to rethink the practice of subventions, less practical than a prize for stimulating the *energy of the intrepid*.

We shouldn't apply Keynes to innovation, but a better understanding of the human mechanisms of self-improvement, summed up so well by Schumpeter as one of the strongest motivators of the entrepreneur.

Productive individuals in innovative organisations



Today's organisations face two great challenges, different yet complementary. The first is to stop seeing productivity as something that can only be achieved within the environment of the organisation (production chain), and start seeing it as something that comes primarily from the individual (every person is a source of productivity). And the second is to axe the idea that innovation is an individual and sporadic act ("I had this great idea in the shower"), and understand that it should be a systematic team effort (a team can be stimulated and dynamised so that it systematically produces innovation).

Through the history of organisations, we have achieved excellent results in organisational productivity (the production chain in some industries is almost unsurpassable), but we still make little use of technological tools and of methodologies that would allow us to convert every individual into a source of productivity, into truly efficient models of shared production and networking (individual productivity).

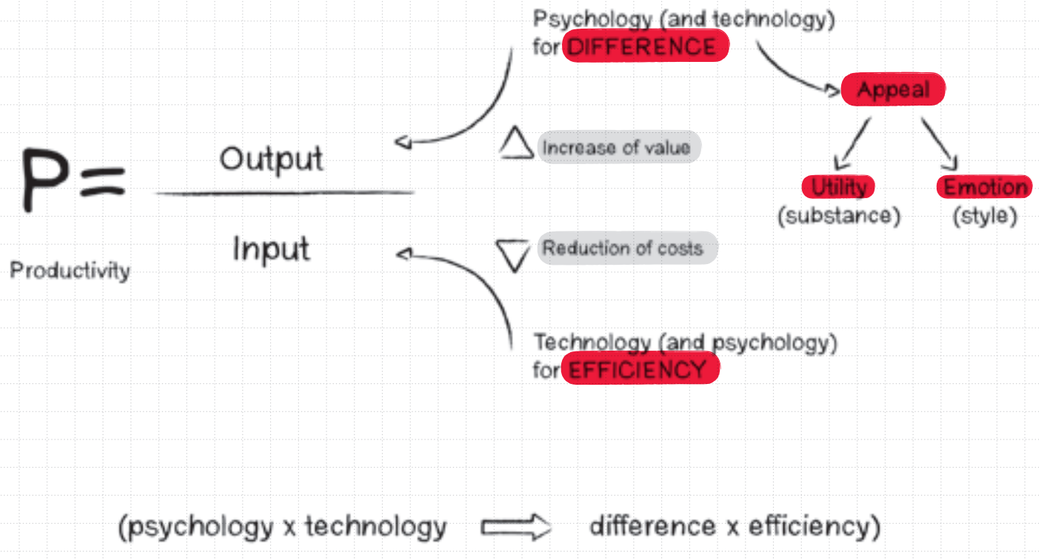
On the other hand, when we think of innovation, the image that automatically comes to mind is the creative individual struck with a brilliant blast of inspiration in the middle of the strangest situation (we identify *creativity* with *innovation*), yet experience shows us that true innovation (in the sense of *ideation* converted into market-accepted value) is not the result of a sporadic individual act, but of a combination of diverse talents, the methodical convergence of which generates value and sustainable results, in an innovative organisation.

Both challenges demand important changes. Changes in our production methods (more productive, autonomous individuals) and in the way we create ideas (systematic innovation to generate value and results). To achieve this, we will need to abandon traditional *precise perfectionism* ("I know my discipline and no more"), used in conventional *management*, and adopt what Roger Martin calls *integrative thinking*[81], an integral way of viewing management problems that analyses the different perspectives with the same interest, with the will to combine knowledge in a *conjunctive* (*y*), and not *disjunctive* (*o*), way.

Today's world is more complex, which means we have more variables to analyse. We have to be aware of the multiple relationships between them, and create an *architecture* of all possible actions that could come out of these relationships, in order to reach decisions that respect the diversity of our environment. As Roger Martin states, we have to "find miscellaneous solutions to messy problems".

value

Efficiency x difference



One of the fundamental characteristics of our economy is its excesses: we have an abundance of everything (in the West…). More pointedly, supply far surpasses demand, and in this supply-dominated environment a company needs to be highly efficient in order to compete. It is no strange thing, then, that the concept of *productivity* has become key.

Productivity is an *output* produced by an *input*: the relationship (quotient) between what we produce (*output*) and the resources we put into that production (*input*). In a company, it can be measured by turnover per employee or labour productivity. If we include other factors of production in the equation, such as machinery, we are looking at multifactor productivity.

How can we increase productivity? Basically, in two ways: acting either on the *numerator* or on the *denominator* of the previous quotient. There are many ways to do this, but one example is by making more with the same (increasing the *output* with the same *input*), or making the same with less (reducing the *input* necessary to generate the same *output*).

Imagine a factory that produces a product or service. With the resources it has available (people and machinery) it must achieve certain results, and to do this, it basically uses two strategies. The first is with an efficient use of resources, to produce a cheap product and recuperate the investment with a high volume of sales. The second is to have a differential approach to the use of resources, with the aim of producing an item that is highly appealing – more appealing than competitors' products – and therefore seek a return on the profit margin from sales.

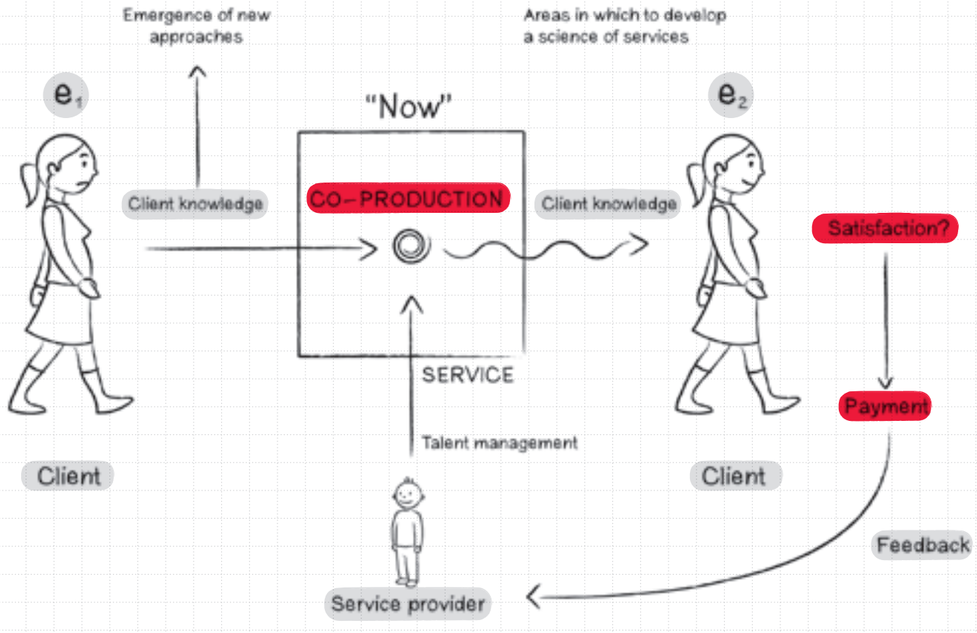
The key question, obviously, is what makes a product appealing, and we use technology to achieve this. There are two principal elements of product appeal: utility and emotion. Utility in terms of personal productivity, and emotion in terms of differentiation, singularity and distinction as part of a special collective. The utility is the *substance*, and the emotion is the *style*[82]. As a consequence, we can use technology in two very different ways for the purpose of increasing a proposal's appeal.

Firstly, we have technologies that merely increase the personal productivity of the user, based on reducing costs and gaining free time, such as mowing the lawn without having to pay somebody else or do it yourself, thanks to a robotic lawnmower[83]. Secondly, we have technology to create a differential experience, which increases perceived value. The Nespresso, for example.

Technology is no longer reduced to efficient machines that aim to increase productivity (of the maker and the user); it can also help to define differential products, which appeal more to the client and generate larger profit margins.

The key is product efficiency by difference, facilitated by technology.

45
Towards a science of services



When you enter a clothes shop, with its *clever* arrangement of lights, atmosphere and young attractive sales assistants, you wonder, just for a minute, if perhaps the combination of marketing efficiency with sensual experience is purely casual. After a brief lapse, you realise that of course everything is very carefully thought out.

The idea is simple: if services now make up most of the advanced economies (in some cases, like the US, up to 80% of GDP), can we continue to *provide* services in this aesthetic way? If the creation of wealth comes from the multiplication of productivity and innovation, and the economy is basically made up of services, shouldn't we all be working to encourage the systematic progression of efficiency-difference in services (being efficient while perceived as different from the rest)?

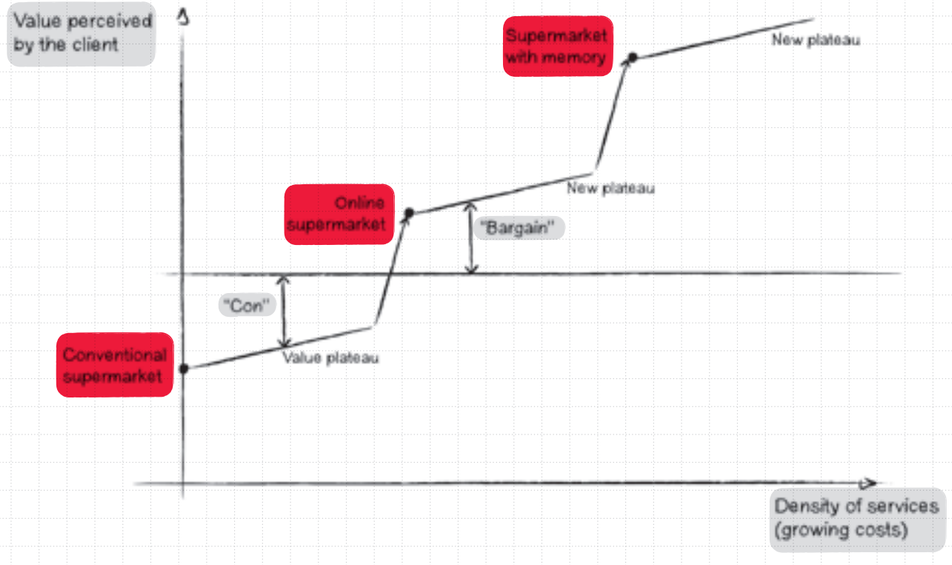
We need a definition of what constitutes a service in order to apply science to its improvement. We could say that a service is payment for satisfaction (*pay for performance*)[84]. Or an intangible and perceived experience, executed for a client, who acts as co-producer of the service, which transforms the state of the client. A synthesis of the two is that a service is payment for satisfaction where the value is co-produced by the client and the provider.

From this definition we can say that a system of services is made up of clients and providers, who interact in the co-production of value. In which case, the areas where quality and level of service could be improved, by applying science, are the management of the provider's talent, and the technology used for this management, as well as the design and management of the environment of experience, and the knowledge of the needs, expectations and perceptions of the client.

The economies of advanced nations use productivity as an engine of wealth. It generates free time for individuals and profits for companies. But so that it is not transformed into poverty created by unemployed or idle people, it is essential that this free time is invested in generating fresh demand for services that are more and more sophisticated. To prevent the growth in productivity paradoxically sinking our economic system, we need to generate more services for more people who want to benefit from them (and pay for them).

So it is not only vital that we improve these services. We need to have a better understanding of how this is done, and of people's reasons for using services and for paying for them. In conclusion, we need a science of providing and accepting good services.

Is value quantum?



The discourse of client-perceived value will be fundamental in the near future. Companies will have to carry out a *re-engineering* of value to determine at what point they are giving less value than is being requested (*undershooting*), or promising more value than they are giving (*overpromising*).

The value perceived by the clients does not have a linear evolution, it grows in spurts. *Incremental* innovations (small improvements) in products and services are no longer considered significant by clients, but as part of the new rules of commerce, which are taken as necessary improvements generated by the accelerated rhythm that constant innovation imposes on our consumer culture

We are now so demanding that a mere increase does not seem sufficiently new to deserve payment. Our attention is attracted by the radical, what we perceive as something that can significantly improve our reality

Value evolves in spurts, which multiply the value perceived by the client. It is as though, suddenly, the product or service is freed from the limitations that were holding it at a plateau

An example is online shopping. The first time you go to a supermarket online, the experience is perceived as a new value. But when you have to re-enter all the products you want to buy every week, the perceived value decreases. There is a new *spurt of value* when the system is improved to remember your weekly shopping list. And another when the service guarantees an exact time of delivery. When you can compare the price of your entire shop with other supermarkets, the value increases again[85]. And the largest increase would be when you can stop shopping altogether, because somebody is *stocking* your fridge for you, and you are assured that whatever you want will always be there.

Perceived value must continuously increase, so that, as Craig Tysdal says, "you expect one thing and you get much more"[86]. The client's perceived value must surpass the level of expectation (be a bargain rather than a con). This is the only way the client will repeat the experience.

46
Is value quantum?

Mining for clients

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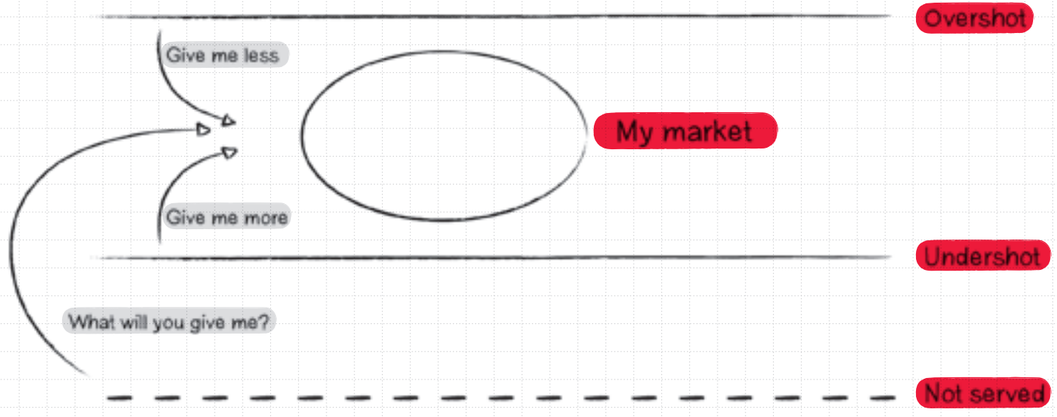
Mining for clients



If one thing characterises the current market it is that, in general, supply surpasses demand: we have an excess of everything. This is an economy of abundance. And it is becoming more and more important that supply occupies a differentiated place on the market. One strategy for this is to discover – detect – new clients amongst the consumers that are undershot, overshot, or uninterested by the current supply[87].

Overshot clients are those who don't want to pay for more improvements, because they already receive in excess of what they need and what they are prepared to pay for. This is the *low-end* of the market (inclined to descend to an inferior level in terms of the services they might receive).

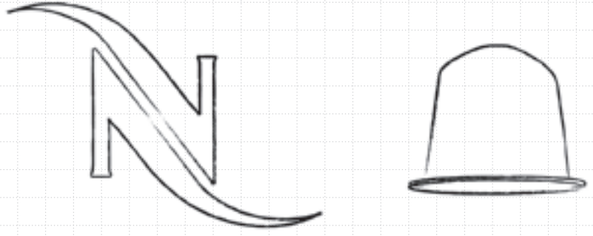
Undershot clients are those who are prepared to pay more for improved products, because what they receive is inferior to what they would be prepared to receive. This is the *up-market* end (inclined to ascend to a superior level).

Non-clients are those people who until now have remained outside the market, because they perceive the supply is not *for them*, either because supply is not aimed at them or because they have been unable to access it.

An example of the exploitation of an *overshot* market can be seen in the boom of low-cost airlines. These initiatives detected at the opportune moment that there were millions of people who would be prepared to travel more, and more often, if the price were lowered, in exchange for fewer inflight services. Another example can be seen in university education for adults, who do not want an official qualification, but simply to learn (education without exams)[88].

A good example of new solutions for *undershot* clients is found in the *market between individuals*, which was so cleverly discovered by e-Bay. Or in aviation, in the small low-cost planes, available to medium-sized companies and used to fly point to point (P2P) between local airports, as an alternative to the hassle of conventional airport systems[89].

Examples of new solutions to non-clients can be seen in the *bankarisation* of clients in developing countries, as their level of income rises. Or the pre-MBA courses, aimed at people who are unable to enrol on an MBA because they lack the necessary qualifications. Or the microloans available that lend small amounts of money to people who do not meet the criteria set by the traditional banking system[90].



N = quick and perfect coffee

a = cheap machine + affordable cups + online selling

b = emotional utility

c = nice machines + lots of flavours

H = "perfect espresso"

48
NabcH

Innovation consists of the process that converts an idea into value for the client while maintaining sustainable profits for the company[91]. It is a process in the sense that innovation must follow a systematic method. Innovation is a discipline[92], and specifically, a discipline that is made up of five parts (multiplicative: if one is removed from the innovation process, the result will be zero).

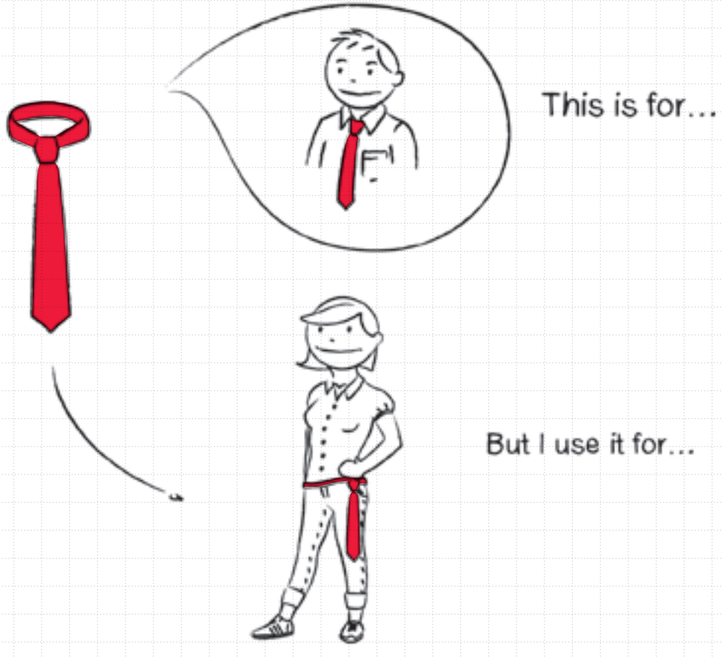
First, work on the needs (pulse) of the client and the market. We need to find out which of the multiple problems not solved for the clients can be answered. We have to know how to explain the value proposal, and use tools such as the *value factor analysis* to estimate the value of one product or service compared with another.

Second, use tools and methods to create value for the client. Apart from using different ways to make a team of people think systematically (*brainstorming, a watering hole*, etc), we have to use a simple but useful analysis for each value proposal presented to the market. An NABC template helps to determine and synthesise, in each proposal, which *needs* the proposal will cover, what *approach* will be used, what *benefits* there are for the client compared to costs, and what the proposal offers with regard to *competitors'* proposals. Through an iterative process, the value proposal improves, until it matches the needs of the client. The value of a proposal is the sum of what it offers to the client (benefits), less the cost it represents (in any form); for this reason, the function of the value creation process is to increase the perceived benefit by reducing the costs experienced by the client (not just financial costs). Finally, the proposal must be synthesised into a clear, concise message, the *hook* that completes the model: *NabcH*.

Third, produce an *innovation champion*. Innovation is impossible without leadership, and any innovation process requires a strong leader, a champion with *binocular vision*, who can lead through short-term problems (business exploitation) at the same time as focussing the group on the long-term (exploring opportunities).

Fourth, work in innovation teams. Innovation is a systematic process performed in a team, and collaboration between the team members cannot be taken for granted (it must be managed: *collaboration is not free*). The management of the team affects the result, either 1+1=0 (no collaboration) or 1+1=3 (synergic collaboration).

And fifth, ensure a strategic alignment. The objectives of the innovation team are the objectives of the organisation, which means that its efforts end in a return (*payback)* on the investment, so the organisation provides the team with the necessary resources to carry out its objectives. Without a *payback* on the investment, we cannot consider the innovation a success.



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Changes in social practice

In his text *Networks of Innovation*, Ilkka Tuomi points out that history shows us that no innovation process follows a linear model but instead consists of a series of communication iterations (presenting your proposal so that people will pass it on in their own environments), learning (incorporating it with what you already know) and social interrelations.

In other words, all innovations have a complex history, with many protagonists. One is the *inventor*, of course, but far from presenting the inventor as the hero of the story, Tuomi suggests that we start to see the *user* as another relevant *hero*. Because, in the majority of cases, it is the user who decides what ends up as an innovation: without the user there is no innovation, only a creative act that may prove to be sterile.

Innovation doesn't just require increasingly multidisciplinary participation, because products are getting more and more sophisticated (technology connected to the design of emotions); innovation only really exists when people (or some people; a users' community) incorporate it into their daily routines. In Tuomi's words: "innovation only occurs when social practice changes". And the protagonist of this change is the user.

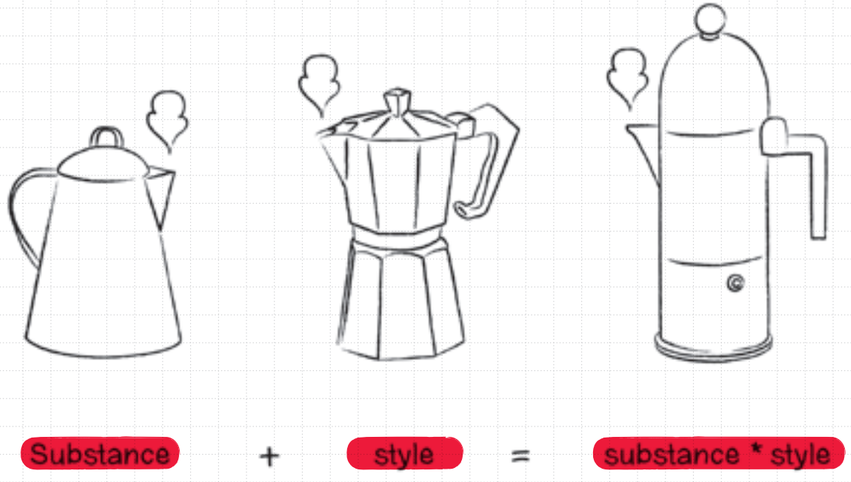
On many occasions there is a notable distance between the uses originally thought up by the *inventor* and the uses that people find for a product. A historical example is mobile phone SMS usage, which was invented as a system for telephone operators to advise customers when they had voicemail, and has become a highly versatile social communication system[93].

The great unknown of many innovation proposals is, in effect, what people will end up doing with your proposal. For example, the intrepid hybridisation of car and motorbike by BMW, with their C1, doesn't seem to have made a significant impact. On the other hand, Apple's iPod has been a huge, even unimagined, *hit*[94].

An example used cleverly by Tuomi is the fashion world. Today, fashion comes from people, it is the people who decide what is fashionable or not. Fashion emerges spontaneously from the behaviour of the masses, and the industry has to respond quickly to the trends people set with their behaviour[95].

The observation of how people behave and use things, and more specifically, how they incorporate new proposals into their social practices, is fundamental for any company. Nobody can innovate without observing how people behave, how they participate in a product's story, and how the different tensions and contradictions between different social practices appear and open up windows of opportunity for new proposals.

Innovation is knowing how to read the contradictions between what people *do* and what they *want to do*. Innovation should not be seen as the proposal of an object, but as the stimulus of a new meaning, ready to be defined by the people. And nobody else[96].



In her book, *The substance of style*, Virginia Postrel affirms that the *substance* of things (what they are for; their function) has historically been very different from their *style* (how we perceive them and feel about their form and aesthetics). The situation today has changed; it is now difficult to sell something that doesn't *combine* form and function: as well as being functional, things have to be beautiful. The aesthetic value of things is important when it comes to choosing a product or service. It is the fusion of sense with the senses. For Postrel, this makes the 21st century the "age of aesthetics".

Her book is crammed with examples of the fusion of function and beauty, and also with arguments to discredit devotees of *hard engineering*, who see aesthetics as a fashion that upsets the *seriousness* of substance. To those who think there is no need to embellish something that already fulfils its function, she responds that today there is no challenge in simply making something to perform its function well (many people can do that). The challenge is in making it attractive, pleasing, enchanting.

And above all, because that's what people want. If I go out to buy a digital camera, given that they all do the same thing, and that they all do it extremely well, I choose one that appeals to my senses, starting with its shape and ending with the way it feels. Touch is a huge field of potential, and one which the technological possibilities available will use to revolutionise many interfaces between objects and us.

Industrial product *designers* are going to have to start playing with colours and shapes (fridges that are still white?). People want to identify with the things they buy; it's a way of expressing their personality. It's about creating wordless reactions with your peer group through the things you use. And if the role of design is to make life more enjoyable, it's not forever, circumstances change all the time.

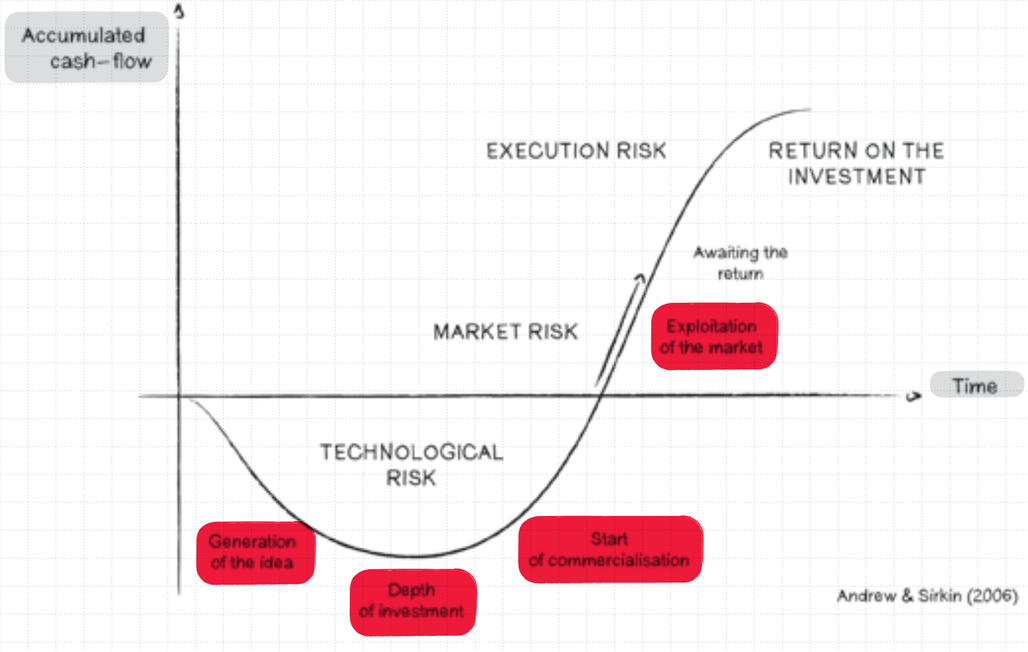
The importance of the sensorial content of objects continues to grow. We give more and more significance to the design of places where we can *immerse ourselves in pleasure*, places where we can feel (very) good. Far from the idea that we are heading into a *depersonalised* future, the truth seems to be exactly the opposite: being different, unique, is what matters (*tuning* yourself and your environment).

We are already in a future where *smart and pretty* reigns, the intelligent *and* the attractive (not the intelligent *or* the attractive). In other words, the synthesis of artefacts and emotions. The *conjunction* as opposed to the *disjunction*.

results

The return on investment in innovation

51
The return on investment in innovation



Innovation consists of having ideas, which are converted into value for the client, while generating sustainable results for the company. Without the last element, the return on the investment, the company cannot (and should not) innovate. In this sense, it is innovation that is accepted by the market and used to generate a return (*payback*)[97].

The ultimate objective of innovation is to generate results, and a fundamental element of this is knowing how to manage the *payback* curve, the curve of investment/results: how much time you are investing in the innovation, and how much time you will need to recover your investment (how much time for the launch of the product, and for sales to reach the volume needed to ensure your investment was worth it).

According to Andrew and Sirkin (2006), the return on an investment is both direct return (money) and indirect return. There are four types of indirect return: knowledge (what we learn from the innovation process), mark (the impact on the mind of the clients), ecosystem (the *partner* companies with which we have to learn to relate in order to complete the innovation), and organisation (being an innovative company means you will attract more and better talent).

There are three stages to the typical curve of return on investment in innovation. The first involves investing to convert an idea into a product or service (generation of the idea). The second is launching and presenting the product or service to the market (commercialisation). The last stage is the production of results from the product on the market (exploitation). The success of the innovation process depends on how the *plasticity* of the curve is managed.

During the first stage, it is important that the development of the product or service doesn't take longer than necessary (among other reasons, to avoid the appearance, halfway through the development process, of a better product on the market developed with more capable technology). It is important to manage the technological risk at this stage of the conversion of the idea into product or service. It is also important to manage the time it takes to launch the product on the market (for example, you need to know when other eventual products will be launched). What must be managed is the market acceptance risk. Finally, you need to be alert to the correct sales volume, so that the economic return is sufficient, and sufficiently quick, to cover the costs of product development and market launch. It is important to manage the execution risk, of optimal (maximum) exploitation of the market.

Innovation should be seen as a systematic team process, involving people from ideas and concept design (who control the technological risk), from marketing (controlling the market risk), and from operations and finance (controlling the execution risk).

what is innovation?

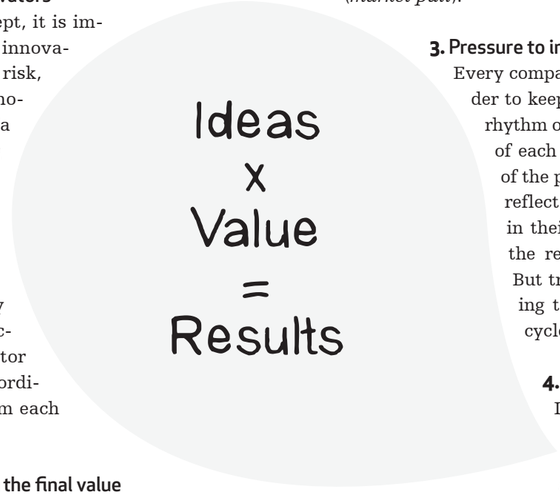
After 10 years' work , during which we have interviewed around 1,000 organisations and poured over hundreds of books and articles, we arrived at the conclusion that there are 12 fundamental ideas on innovation:

1. **There is no innovation without innovators**

Innovation is not an abstract concept, it is impossible without the figure of the innovator, who has the vision, takes the risk, and works with a passion. The innovative organisations that Infonomia has documented all have one thing in common: there is always somebody with these characteristics to lead the project. There is no innovation without leadership, because innovation is not something spontaneous that is undertaken by an individual; it is a systematic process executed by a team. The innovator therefore has to know how to coordinate, motivate and get the best from each member of the team.

2. **Innovation in the process and/or in the final value**

Innovation is undertaken by improving the management of the production process, or by increasing the final value offered to the client. In other words, from the denominator (process) and/or from the numerator (value) of the productivity formula (productivity = *output/input*). Management improvement of the processes is done basically through technological innovation; the final value increases due to the psychology, conceiving new products and services that the client appreciates as having a differential value. You need to know how to combine both types of knowledge: keeping watch on the latest technological advances (*technology push*) and following closely the evolution of the needs and desires of the market (*market pull*).



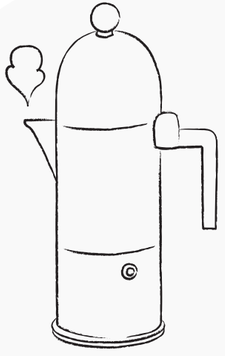
3. **Pressure to innovate depends on the industry**

Every company has to launch new products in order to keep abreast of the market, although the rhythm of the launch depends on the dynamics of each particular industry and the lifecycle of the product or service. Companies have to reflect on the average acceleration of change in their sector in order to remain ahead of the rest, without overspending resources. But trends show that all industries are going to have to speed up their innovation cycles.

4. **The engine of ideas x value = results**

Innovation consists of transforming ideas into new products or services, which the market considers valuable and which will generate sustainable results that allow the cycle to be maintained. The ideas-value-results engine can never stop, and to ensure this, it is necessary to establish multidisciplinary teams who work in perfect synchronisation within the fields of design (ideas), operations (results), and customer relations (value). This is the key to maintaining a constant acceleration of innovation, and to reducing deadlines and costs.

5. Knowing how to transform ideas into a differential value



Differential ideas are the prime material of innovation, and the best way to promote innovation is by creating an environment that encourages the generation of ideas. It's all about coming up with new products and services, new processes and new business models that will be accepted by the market in terms of value. The more differential the idea, the higher its value. The innovator is the person who discovers and transforms something that others may have seen but not dared or known how to turn into value: "What a great idea! Why didn't I think of that?" is a typical response to a good idea transformed into a successful innovation.

6. Innovation is what the market accepts

No matter how good or interesting an idea might be, it is not enough to convert it into innovation. Firstly, the demographic that would give it a high value must be identified and the best way to present it determined. Then, the chosen demographic has to accept the product and start to generate results by using it and buying it. It is the people who use the product that decide whether or not it is an innovation. The difference between *invention* and *innovation* is precisely that invention is an individual creative act, and innovation is acceptance by the market and sustainability over time.

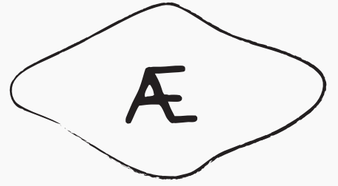
7. Overcoming the three challenges: technology, execution and market

In order to keep the innovation engine turning, innovation has to be constant, because the resulting profits – whose sustainability in time is basically a consequence of the organisation's capacity for innovation today – depend on it. To achieve this, there are three challenges to overcome: 1) the technological risk – you must be quick with the technological development of the idea, so that no competitors can launch a better solution in the meantime; 2) the execution risk – you must know how to organise the entire chain of value, your own part and those of providers and partners, in order to ensure that the idea is properly launched onto the market, and 3) you must know how to convince the market that your proposal is interesting and different.

8. Create multidisciplinary teams

In order to control the three risks mentioned above, innovation should be carried out systematically, by teams made up of professionals from three fundamental fields in the company: design, operations and customer relations. The *design* department controls what the competition is up to; *operations* are in charge of the capabilities of the most recent technology, and *customer services* must compare, almost in real time, the reception of the new proposals by the market.

9. Hybridisation: an unbeatable formula for innovation



Hybridisation – the action of creating new innovative products and services from other pre-existing ones – is one of simplest of innovation formulae. The main reason is clear: it is much easier to innovate by combining solutions that already function in the market than to conceive ideas from scratch or come up with radical innovations. There are two ways to use hybridisation: by combining pre-existing products or services, or by coordinating professionals from different fields, that is, by forming multidisciplinary teams.

10. Include innovation management in the daily routine

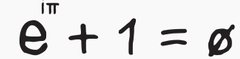
The exploit/explore dilemma must be resolved: "If I dedicate my time to exploration I don't have time for day-to-day management". There is no valid management today that does not include innovation management as a principal function. This is the only way of ensuring that there is still a day-to-day to manage in the future. To keep on top of it, the key is to set growth objectives linked to innovation, based on the balance between exploitation and exploration.

11. Connect talent with resources

"Those with ideas have no money, and those with money have no ideas" (Alfred Whitehead). Mechanisms must be created in the institutional and business environments that open up the most consolidated organisations – those with the most resources – to the up-and-coming people and initiatives with talent and innovative ideas. The universities need to be connected with the private companies, the most radical innovation with the more stable businesses. This is the way to bring new energy to established companies, and to reduce the distance between new ideas and the market.

12. Know how to set limits

What are the recommended limits in innovation? Firstly, the organisation's ability to manage a determined number of production processes and innovative products: it is unwise to create an unlimited portfolio of innovative products because managing it is too costly. Secondly, the capacity of the market to absorb a diverse or complex supply of products.



The equilibrium between the organisation's resources, the value perceived by the client, and the predicted results should never be lost.

epilogue:
infonomist manifesto

1. The world functions because it is full of normal people doing extraordinary things. Without their efforts, which usually go unnoticed, the economic and social machine would not keep turning.

2. Collaboration is more productive than competition, particularly when a large part of the population has shareable knowledge. But, in general, we do not yet have non-financial economic mechanisms that allow us to take advantage of this possibility (we all want to take part, but we also want to pay our bills…).

3. People, not public administrations, are the engines of progress. The function of administrations is to create conditions so that people can embark on projects, and thus find solutions to social problems. They need to plan platforms and infrastructures, and ensure equal opportunities. But, beyond that, they must not prevent people's creativity from developing by supplanting them when it is not necessary.

4. Progress is not possible without equal opportunities. Without equality (principally in education), the distance between the different social classes gradually widens. The state must apply an intelligent tax system to ensure this cannot happen.

5. Young people should have more support, and also more challenges. Overprotection jeopardises their ability to face the future. Helping them to understand the kind of future, global and rapid, they will grow into requires a change to the education system, which for example, ought not to allow a university qualification without prior study or employment abroad. We have to make them more responsible, and stimulate their desire for leadership.

6. We need to establish mechanisms to connect ideas with power. Those who want to with those who can. Unfortunately, this connection does not normally happen spontaneously; we have to create the conditions to encourage it.

7. It is vital that children learn the basics of business at school. Concealing information about how wealth is really created in society only encourages children to pursue a career in local government (which is important for society, but shouldn't be the default vocation).

8. All members of parliament should gain some experience in business, and find out for themselves how to earn a living creating value that somebody is willing to pay for. A society governed by *business illiterates* is unable to progress in a system based on capitalism.

9. Education should be personalised. You only get the most out of your talents when you can connect what you learn with what motivates you. The education system tends to *measure what you don't know* rather than *what you do know*. Today's technology allows disruptive leaps in learning methods. We only need to do it decisively.

10. Money should be reinvented. And above all, it should be impossible to make money from money. We need new rules, such as taxes imposed on the movement of capital on an international scale (the Tobin tax), or the prohibition of purely speculative sales of securities (goodwill could be directly related to the length of time the seller has kept the securities).

references

1 See his website at http://www.danpink.com.

2 In his article, "The perils of imitation age".

3 The exact phrase by Bonabeau is: "When there is too much information, imitation becomes a convenient heuristic".

4 In his book, *The wisdom of crowds* (2004).

5 In Hayek's terms, we would say that a level of order superior to society's primary components – us – comes from the *cosmos*, from spontaneity. The great institutions of history are not the result of planning (*taxis*) but of spontaneous emergence, caused by the effects of time and the continuous mechanism of trial and error.

6 Considering the trend of today's communication media, I am not sure if they are helping to increase diversity and the independent choices of citizens, or if they are fusing our minds into one language.

7 See McKinsey's study, *Why women matter*, at http://www.mckinseyquarterly.com/A_business_case_for_women_2192.

8 See the book, *Why women mean business* (2008), and the corresponding blog at http://whywomenmeanbusiness.com.

9 See McKinsey's study, *Why women matter*, as cited in reference 7.

10 In the MIT MediaLab, Schrage was then co-directing the *e-markets* initiative.

11 Buying a piece of jewellery used to be a special thing, a rare occasion. Today it's more of a *digital routine*; see for example how diamonds can be bought on the Internet at BlueNile (http://es.bluenile.co.uk).

12 And not only when it gets used later for wrapping, but from the moment we buy it…

13 So what we must do, I am convinced, is to *water* society so that new entrepreneurs can flourish who believe in science as an engine of business; in science as the *only* form of finding *disruptions* in materials and in energy, and thus come up with new *solutions* to our problems.

14 Roger Martin (http://www.rotman.utoronto.ca/rogermartin) explains this in a very interesting, and concise, article in the April 2005 edition of the magazine *Fast Company* (http://www.fastcompany.com/magazine/93/design.html). Martin was director of the company Monitor (the consultancy created by Michael Porter), and is today dean of the Rotman School of Business at Toronto University (http://www.rotman.utoronto.ca/index.html).

15 Because, remember, "markets are conversations", as the *Clue Train Manifesto* claimed (www.cluetrain.com).

16 In the end, which is better – a General Motors managed by the state as some sort of *Government Motors*, or a General Motors *drastically* reinvented as *Google Motors*, where the digital giant applies all the knowledge it has gained about open innovation from its *intimate* relationship with the market? See the book *What would Google Do?* by Jeff Jarvis.

17 In his book, *The language of mathematics*, Keith Devlin describes maths as "the science of discovering patterns" (models).

18 More on this subject in this article from *The Economist*: http://www.economist.com/science/displaystory.cfm?story_id=9468793.

19 However, this is something that the theory of networks has already explained: in every collection of *bodies* in which there are *exchanges*, distribution is generated, according to the Pareto principle, or power law. More in *The Economist* article: http://www.economist.com/science/displaystory.cfm?story_id=9861412.

20 See the article: http://rocs.northwestern.edu/projects/swine_flu.

21 This was done with the very popular game, World of Warcraft.

22 This is a hybrid of medicine and videogames. More in *The Economist*:http://www.economist.com/science/displaystory.cfm?story_id=9682597.

23 More at http://www.stanford.edu/~kdevlin.

24 Adam Smith, from *An enquiry into the nature and causes of the wealth of nations*.

25 See the idea-force "Womenomics".

26 See http://www.worldchanging.com/bios/alex.html.

27 Perverse in its sense of contrary: problems that are not straightforward.

28 One methodology for dealing with perverse problems is a *dialogue map*. See more at: http://cognexus.org.

29 See the article, "The myth about creating myths", in the December 2007 edition of *Fast Company*: http://www.fastcompany.com/magazine/113/column-made-to-stick.html.

30 See, for example, the article "A garage and an idea: what more does an entrepreneur need?" In *California Management Review*, vol 48, nº 1, pp 6-28.

31 See reference 29.

32 As Joan Magretta said in her fantastic book, *What management is*: "Real genius is transforming complexity and specialization into performance".

33 According to Roger Martin, in his book, *Opposable Mind* (2007).

34 See the idea-force "The innovation engine".

35 More in Chris Anderson's original article in *Wired*: http://www.wired.com/wired/archive/12.10/tail.html; or on his blog at: http://longtail.typepad.com/the_long_tail.

36 In Anderson's original text: "Small niche markets which only in the aggregate can generate large revenues".

37 Demonstrated, for example, by the Netflix online dvd rental service (one of the Internet's great successes), which states that 70% of its business comes not from recently released films but from those in its catalogues. See: http://www.netflix.com.

38 James Martin proposed a similar methodology in the nineties when he presented his version of *information engineering*. See: http://en.wikipedia.org/wiki/Information_engineering.

39 See the website at http://www.ted.com. This is a type of transversal and eclectic act that is beginning to prove successful in certain directive layers of the most innovative US organisations. It was invented by Richard Saul Wurman at the end of the eighties. His models have led to the development of many more, such as those pioneered at PopTech (http://www.poptech.com).

40 See the term *unconference* in Wikipedia: http://en.wikipedia.org/wiki/Unconference. The definition given is "a facilitated, participant-driven conference centered around a theme or purpose".

41 This type of non-intrusive *ambient information* is offered by Ambient Devices: http://www.ambientdevices.com.

42 See the ideas in Accentus: http://www.accentus.com.

43 See also the idea-force "Changes in the distribution of understanding".

44 As David Noble says in his book *The digital diploma mills* (2003).

45 Remember Infonomia's official slogan: "A new day, a new idea".

46 See the idea-force "The paradox of the information society".

47 For example, it is the reader who has to read the newspaper in order to understand the news; and the reader who must read the whole book to understand its content.

48 Some communicators say that if it is not possible to break a proposal down into three steps, nobody will understand it. There are many examples of this on the Internet, where new business models have gained popularity due to a strong emphasis on the synthesis of three parts (a good example can be found in "How it works" by Netflix, where a simple drawing explains the process of client relationships: http://www.netflix.com/HowItWorks).

49 His extensive experience results in some very surprising mental leaps, such as his comparisons of the Internet as a means to describe the realities of the early 21st century with the late 19th century narrative novel or with Gothic cathedrals. More in the book *Interface Culture* (1997).

50 Bush also predicted that, following an age governed by the image, there would come a period in which text would once again be dominant, when we would have *software* available that would allow us to find the texts containing the exact answer to our questions more easily. This would solve, incidentally, the current *weblag* that search engines generate: we start searching for one thing but end up exploring things we were never looking for. This is an idea that was written long before the birth of Google.

51 For example, when queues build up at toll gates on the motorway, more gates open automatically. Or when the temperature falls

below a certain point, anti-freeze is sprayed automatically on the pavements.

52 We will have intelligent cars, intelligent infrastructures, intelligent management of employees' activities, demand management models in real time; a world of simulations, artificial vision, advanced robotics, collective intelligence, increasing human abilities, etc.

53 See the idea-force "The paradox of the information society".

54 See the idea-force "Changes in the distribution of understanding".

55 See the ideas of Ambient Devices at http://www.ambientdevices.com.

56 See the idea-force "Hybrids".

57 A phrase coined by twice-winner of the Nobel Prize, Linus Pauling.

58 See the book, *Payback: Reaping the Rewards of Innovation*, by James P. Andrew, Harold L. Sirkin and John Butman (2007).

59 More in Geoffrey Moore's article, "Darwin and the Demon: innovating within established enterprises", in the *Harvard Business Review* (July–August 2004), or in his book, *Dealing with Darwin: How Great Companies Innovate at Every Phase of Their Evolution*, published by Portfolio Hardcover (2005).

60 See the BoKlok proposal at http://www.boklok.com.

61 This article was inspired by "Unbundling the corporation", by Hagel and Singer (*Harvard Business Review*, March 1999).

62 Each *point* of the value triangle requires a specific technology. Knowledge of the client is dealt with by CRM (*customer relationship management*), coordination of relations with providers is dealt with by SCM (*supply chain management*), and the design function must feed from competitive intelligence systems and from the observation of trends (*business intelligence*). These must then be integrated as a whole through tools such as ERP (*enterprise resource planning*) and PLM (*product lifecycle management*).

63 There is an *unmissable* article on this theme written by Mark Gottfredson and Keith Aspinall in the *Harvard Business Review* (November 2005, p. 62), entitled "Innovation vs complexity: what is too much of a good thing?"

64 IDEO, in the book, *The Art of Innovation,* by Tom Kelley (2001).

65 See the article "Connect and Develop", by Huston and Sakkab, published in the *Harvard Business Review* (March 2006), which explains Procter & Gamble's C+D innovation model in more detail.

66 See also the book, *Open Innovation*, by Henry Chesbrough (2005).

67 Examples of these ideas markets are Innocentive (http://www.innocentive.com), NineSigma (http://www.ninesigma.com), and yet2.com (http://www.yet2.com).

68 See website at http://www.dainese.com.

69 See website at http://www.santacole.com.

70 See website at http://www.stokke.com.

71 This article is based on a conference given by Gladwell in 2007 for the readership of *New Yorker* magazine, available at http://www.newyorker.com/online/video/conference/2007/gladwell.

72 See http://en.wikipedia.org/wiki/Linear_B.

73 See http://en.wikipedia.org/wiki/Fermat%27s_Last_Theorem.

74 10,000 hours are 5 years of 200 days at 10 hours per day, or 10 years of 200 days at 5 hours a day.

75 See http://www.thescholarship.com. The project has been halted by the economic crisis that started in 2008.

76 See projects by Zipcar (http://www.zipcar.com) or Avancar (http://www.avancar.com).

77 See Steve Johnson's book, *The ghost map* (2006).

78 The Arup architectural study (http://www.arup.com).

79 The Reactable from a team led by Sergi Jordà at the Pompeu Fabra University in Barcelona.

80 The case of the *Clínica Carrière* in Barcelona.

81 See the description of the *integrative thinking* model: http://www.rotman.utoronto.ca/integrativethinking.

82 See the book, *The substance of style*, by Virginia Postrel (2004).

83 Like the lawnmower robot, RoboMower, http://www.robomower.com.

84 See the *seminal* article on the science of services in "The emergence of service science", by James Spohrer, from IBM Research, at http://www-06.ibm.com/jp/press/pressroom/kaiken/20050909ab2.pdf.

85 See, for example, the proposal of Mysupermarket at http://www.mysupermarket.com.

86 See his article at http://www.fastcompany.com/online/50/netsolve.html.

87 The central concept of this idea-force is taken from the book *Seeing What's Next: Using Theories of Innovation to Predict Industry Change*, by Christensen et al., Harvard Business School Press (2004).

88 As is the case of the Ateneu at the Universitat Oberta de Catalunya (http://www.uoc.edu/ateneu).

89 See the Javelin example of the Aviation Technology Group (http://www.avtechgroup.com).

90 See the ground-breaking example from the Grameen Bank (http://www.grameen-info.org).

91 The *value factor analysis* has become a significant topic in innovation. In a society of excess, in which supply is superior to

demand in almost everything, companies propose layer upon layer of value to make themselves unique and attractive to customers. Today it is a necessary condition that any proposal is workable (if it does not comply with what it promises, the market will expel it), but this is far from enough. Other elements of value beyond functionality, such as style, experience, ease, and learning-speed are much more important to the client as perceived value than the product itself.

92 This article was inspired by the text, *Innovation: the five disciplines for creating what customers want*, by Carlson and Wilmot (2006).

93 Studies have shown that some of the main uses for SMS now are flirting, dating, or light digital adultery.

94 Its social success can be demonstrated by a fashionable phrase in California a few years ago: "iPod, therefore I am".

95 The case of Zara, which can transform an idea into an item for sale in less than 15 days.

96 Tuomi uses a beautiful metaphor. Words exist, and new ones can be invented. Their meaning is acquired through use. One word has different meanings for different people, in different situations. In different conversations words take on different meanings. An innovation is a *word* seeking meaning. We have ideas, but we manage them from a traditional perspective of innovation: we offer something and wait for people to adopt it automatically. Tuomi shows how we are mistaken. It is the people who decide what is an innovation, by integrating it, "giving it meaning in their regular social habits".

97 A very useful text about the how and why of the return on investment in innovation is the book, *Payback: reaping the rewards of innovation*, by Andrew and Sirkin (2006).

notes

visionomics

Text and idea of drawings
Alfons Cornella*/Founder of Infonomia*

These are truly fantastic times. Times characterised by the acceleration of change, benefiting from technology that fuels itself: better technology facilitates the development of better technology, and so on. Times of disruption, with whole industries falling into crisis. Technology radically transforms how we do what we do, and helps us to do what we haven't yet done. It transforms the how, what, where, when, how many, and even the why. On top of all this new areas of the world have surfaced like volcanic eruptions, from the bottom of the economy, from the small print of statistics on progress and social development.

The opportunity of living in these truly unique times ought to inspire a strong sense of *intelligent optimism*. It's not just that optimism is the only antidote to the crisis, but that we are now in a unique position: millions of people are ready to exploit the world's technological heritage by combining individual and collective intelligence. In fact, if we face one critical challenge in the next few years, it is to increase our knowledge and abilities to solve the greatest problems of the world (the planet) and humanity (society).

This book synthesises some of the original ideas I have developed over the past 10 years, as a consequence of reading many books, meeting many people, and dedicating a lot of time to rearranging them into a form that I hope will be useful for the development of new business opportunities. And to make it more practical, I have used a format that I find enjoyable: illustrations and brief comments. This is a visual book, that I believe has something new to say. Some of them are bold ideas, but… when the time is right.

infonomia

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