Research paper: Creative destruction of knowledge
understanding innovation processes in leading companies

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1 Assignment of the seminar on Knowledge Management as part of the UOC’s Doctoral Programme on the Information and Knowledge Society (2001-2003)
1. Introduction

1.1 Objective

We are in times of discontinuities, mainly due to the radical innovations affecting the information and communication technologies. These do affect directly the IT and the telecommunications sectors, and indirectly most other sectors of economic activity. For at least two things: information now is much more diffused, almost in real time, and organizations have the possibility to integrate ICT in their work (both in internal teamwork and in relations with customers and suppliers). Knowledge is being incorporated as the fourth factor of production, in additional to the traditional land, capital and labour. In the literature on the relatively new discipline of knowledge management, I found especially interesting the concept of knowledge generation and the somehow parallel idea that —in the face of discontinuities— new knowledge destroys or renders obsolete existing knowledge.

In this paper I look at this subject, applied to the microcosmos of the firm, first by reviewing the literature (section 2—from Marx and Schumpeter to Burgelman and Cristensen) and afterwards by observing four leading companies in Spain (section 3). In section 4, I discuss what I consider the more relevant issues, before concluding with a few recommendations for action, which are also subjects for further research.

1.2 The research question

In times of disruptive change (in technology and market structures) companies need to innovate, and incremental innovation may not suffice (let alone have non-incremental effects). Disruptive innovation is needed, and for this to happen, knowledge (in form of products, technologies or business lines) also needs to be “creatively destroyed”. Ultimately disruptive innovations create new growth in the form of new markets and new customers, the capacity to create is usually more important than the erosion produced to existing products and services.

The concept of creative destruction was introduced by Schumpeter referring to the capitalist economic system. In this paper we take a microeconomic view and apply

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2 Incremental innovations improve the performance of established products, services or business models. Disruptive innovations transform traditional markets. Examples are TV on computers, electric cars, organic food, renewable energy, digital imaging, e-commerce (See Hannaford 2003).
it to individual firms. It definitely matters to establish companies whether they have the capacity to produce disruptive innovations or new coming competitors do it instead. In the latter case growth opportunities will erode and market shares will decline.

In this context, a relevant question for business strategy is to locate where is a company’s knowledge destroyed? outside or inside the firm?, do successful companies cannibalize their own products and processes to give way to new ones, thus anticipating or responding to disruptive changes? or do competitors do it first, thus undermining positions of leadership.

The literature suggests that failure to innovate is the prime source of business failure. The market (new competitors, new demands, new technologies) is the main responsible for the creative destruction of knowledge that leading companies suffer, just a few of them are capable of reinventing themselves in times of discontinuities.

2. Literature review

2.1 Creative destruction

Classic economists who viewed capitalism as an evolutionary process, such as Marx and Schumpeter, long ago recognized its “endless and limitless drive to go beyond its limiting barriers. Every limit appears as a barrier to be overcome” (Marx and Engels, The Communist Manifesto -1848, cited in Elliot, 1980). Schumpeter explicitly mentions this concept in his book of 1942 Capitalism, Socialism and Democracy:

The innovational process “incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism” (Schumpeter 1975).

As Elliot (1980) points out, both authors recognize the dynamic development of the capitalist system, an evolution process which comes from within, is discontinuous and brings qualitative changes or “revolutions”, which fundamentally displace old equilibrium and create radically new conditions. Marx is then more concerned about capitalism’s surplus values and the division of classes (capitalist employers and workers), and how the working class can become an agent of transformation to socialism. Schumpeter also predicts the transformation of
capitalism into a socialist economic system, basically because some disfunctionalities of capitalism (namely the concentration and centralization of capital) destroy the institutional framework which originally allowed entrepreneurs to access to capital and compete with established capitalists and firms. Such a discussion is beyond the scope of this paper. Nevertheless two more ideas from Schumpeter are especially relevant for our purpose.

First, the economic cycle: recurrent economic fluctuations by which periods of innovations and prosperity are followed by depressions, which are periods of absorption of the innovations generated earlier. Second, innovations tend to create temporary monopolies, and a period of extraordinary profits, which is the price society pays for such advancements. (Concepts developed in Schumpeter’s Theory of Economic Development, first written in German in 1911).

More recently, Foster (1986, 2001) has empirically observed the accelerating rate of turnover of companies in the S & P 500 index since its foundation in the 1920s, a reflection of changes in the economic mix of business in the United States. He identifies three waves of substitution of established companies by new ones: first wave shortly after World War II, second wave in the 60s, and third wave in the 80s, and the (moving average) rate follows an increasing trend. "By the end of the 1990s, we were well into what Peter Drucker calls the Age of Discontinuity" (Foster and Kaplan, 2001). With markets changing in discontinuous and accelerating waves these authors recommend that firms "increase the rate of creative destruction to the level of the market itself, without losing control of present operations". For this they need to deal with –what they call– “the cultural lock-in” which manifests itself in the fear of cannibalization, the fear of channel conflict and the fear of earnings dilution.

2.2 A company’s learning cycle
Differentiation is a key strategic issue in order to gain a unique and valuable position in the market (Porter, 1996). Today it becomes increasingly difficult to protect a company’s know-how as innovative activities and products are quickly diffused. In fact, successful new positioning is often the result of a set of differentiated activities ranging from product configuration to employee behaviour, from the selection of equipment to management systems. Their combination is
possibly more difficult to translate exactly to a different environment. This is a powerful reason for companies seeking to constantly generate value from their knowledge. Here we are faced with "the paradox of value": what makes this knowledge valuable is its scarcity (we possess it and nobody else), but if we want to maximize its utility we then compromise its scarcity, which makes it difficult to fully develop and exploit its utility (Boisot, 1998).

Boisot develops a dynamic model he calls the I-Space, whereby knowledge assets move according to their degree of codification, abstraction and diffusion. As knowledge, which might be initially personal (concrete and uncodified), becomes more abstract and codified (even if it is proprietary, protected or not) therefore more useful, then it can become openly known and diffused to the point of maximum entropy where the capacity to generate value has disappeared (the initial personal knowledge has become common sense). This progression from knowledge residing on the heads of individual people, to becoming more abstract and codified, when its value can be maximized, is referred by Boisot as the social learning cycle. He then distinguished between the neoclassical learning model (N-learning) and the schumpeterian model (S-learning).

Basically N-learning would try to extract maximum value from knowledge assets by erecting barriers to their diffusion, searching a point of equilibrium before knowledge is widely diffused. In contrast the Schumpeterian model, in reference to the creative destruction view, sees the learning cycle as generating disequilibrating discontinuities and actively explores the creative potential of uncodified and highly concrete knowledge. I find this a useful framework to analyze a company’s behaviour in the face of disruptive change and the search for disruptive innovation (as opposed to incremental innovation).

2.3 Product cannibalization and business exit

Substitution of products and closure of business activities are a great difficulty for companies to manage. More often than not the market decides more than company strategy. Two companies have been widely studied as examples of successful product development and business exit strategies: 3M and Intel respectively.
3M, selling over 50,000 products with a significant share from the younger generation, has made its strategy to enable transfer of knowledge between employees as a way to stimulate ideas which are then transformed into new products. This has become the company’s culture and business driver. In the mid 90s, most of the innovation was incremental (too much of the company’s growth was coming from changes to existing products), not satisfied with that, top management set the objective that 30% of the sales should come from products inexistent four years before. Disruptive innovation became a priority and as a result it adopted the lead user process, which had been successfully developed by a team in the medical-surgical division (see von Hippel et al. 1999).

Intel’s exit from its original memory business to the emerging microprocessor business in the 80s has been widely studied and documented by Burgelman (1994, 1999). Intel was especially able to use intraorganizational ecological processes to cope with external selection pressures:

The “maximize-margin-per-wafer-start” rule required product divisions to compete for shared manufacturing resources and forced open debates concerning resource allocation. The criteria governing these debates were constructive confrontation based on knowledge rather than hierarchical position and economic performance in the market place rather than success in internal politicking. These criteria ensured that the internal selection processes accurately reflected the competitive pressures faced by different business in the external environment (Burgelman, 1994).

Once established by top management, this internal selection environment favoured that

"by mid-1984, some middle-level managers had made the decision to adopt a new process technology which inherently favoured logic [microprocessor] rather than memory advances, thereby limiting the decision space within which top management could operate (...) By the end of 1984, top management was finally forced to face up to the dissolving strategic context for DRAMs”, it decided against the required investment for the 1 Meg memory.

In October 85 the decision was taken to stop producing DRAMs and implement the exit decision. By then the company had developed the new and more complex competences required to implement design architectures in logic products. CEO Andy Grove recognized, years later, that "the DRAM business had supported the company for over 10 years, had been well managed, had developed key corporate
competencies that were redeployed when needed most, and was a business that Intel exited at just the right time” (Burgelman, 1994).

From the Intel case Burgelman derives a process theory of strategic business exit, and he points out three key aspects in that case: technological competencies in a dominant firm technology produced important unplanned innovations, the internal selection environment and the capacity of top management to recognize the strategic dimensions of action (led by middle managers) vs. official strategy.

2.4 The innovator’s dilemma

“Sometimes it is right not to listen to customers, to invest in lower-performance products that promise lower margins, and to aggressively pursue small, rather than substantial, markets” (Christensen, 1997).

Intel’s case supports this view: initial investments in microprocessors were made in spite of no immediate market applications (they were seen as a way to sell more memories). Christensen states the innovator’s dilemma in the following terms:

“the logical, competent decisions of management that are critical to the success of their companies are also the reasons why they lose their positions of leadership (when confronted with disruptive changes in technology and market structure)”.

He recommends creating capabilities to cope with change by: creating new corporate structures within the firm, spin out an independent organization from the existing one or by acquisition of a firm whose processes and values closely match the requirements of the new task (Christensen and Overdorf, 2000). Such line of action is strategic for the business, in the sense that strategy requires to make choices and deal with trade-offs. Both Christensen and Burgelmann (also Porter) would agree that firms need to generate conditions of competition between existing businesses and new business lines, when competing for scarce resources management is confronted with the need to choose and purposefully limit what the company offers.

In the discussion about generation of alternatives for existing businesses there is also some literature on “real options”, a way to introduce flexibility to deal with uncertainties and changing market conditions. Trigeorgis (1996) mentions as such the following examples:
- option to defer investment
- option to default during construction (time-to-build option)
- options to alter operating scale: to expand, to contract, to shut down and restart operations
- option to abandon for salvage value
- option to switch use (e.g. inputs or outputs)
- corporate growth options (that set the path for future opportunities)
- multiple interacting options (various interrelated options whose combined value may differ from the sum of their separate values)

The real options approach, both theoretical and applied in management practice, is inspired in the financial options (call option -right but not obligation to buy an asset, and put option –to sell) where the option’s value derives from the asymmetry between having the right but not the obligation. The logic of discounted cash-flow analysis tends to favour investments in incremental improvements, where costs and payoffs are more reliably forecasted, than investments in radical innovation, which are by nature long term and questionable. The options approach allows valuing alternatively this type of projects.

“Many of the real options (e.g. to defer, contract, shut down, or abandon a capital investment) occur naturally; others may be planned and built in at some extra cost from the outset (e.g. to expand capacity or build growth options, to default when investment is staged sequentially, or to switch from alternative inputs or outputs)” … The value of growth option projects “derive not so much from their expected directly measurable cash flows as from the future growth opportunities they may unlock (…) Real options have the potential to make a significant difference in the area of competition and strategy. Sustainable competitive advantage resulting from patents, proprietary technologies, ownership of valuable natural resources, managerial capital, reputation or brand name, scale and market power, empower companies with valuable options to grow through future profitable investments and to more effectively respond to unexpected adversities or opportunities in a changing technological, competitive or general business environment” (Trigeorgis, 1996).

From the previous examples of 3M and Intel, we could view 3M’s policy to encourage their laboratory employees to spend 15% of their time on personal development projects as a growth option. Similarly Intel’s repurchase of the rights to the chip design it had developed for the Japanese calculator company, Busicom, represented -at the time- a growth option as there was no immediate market outside calculator applications.
2.5 Focus on people and competencies not on products

Innovation is the result of observation, imaginative research and knowledge exchange among a company’s team. The organizational behaviour of the firm and the priorities set by its leaders also determine greatly its success. Strategically important as innovation is for the long-term survival of companies, it should be understood around the human factors determining organizational competence and core capabilities. Utterback, one of the more renowned studious of industrial innovation concludes that “to sustain its success and renew its products, the firm must focus not on the products but on the people involved” (Utterback, 1994).

We are again confronted with the need to choose and prioritize the firm’s activities.

“A fundamental approach to renewal is the development of core capabilities. (...) Instead of examining their firms as portfolios of businesses, executives should view them as portfolios of core competencies that transcend specific strategic business unit boundaries (...) Such competencies become the basis for multiple market applications, are difficult to imitate and provide a substantial part of the design in final products that solve customers’ perceived problems and needs. The core products needed for the firm’s thrust toward new markets flow from organizational strengths” (Utterback, 1994, referring to Prahalad and Hamel, 1990)

Confronted with disruptive innovations, companies in the same industry may take a different view of weather they are competence enhancing or destroying. Cooper and Smith (1992, cited by Utterback 1994) studied 27 firms in 8 industries that were threatened by radical innovation, they all adopted the threatening innovation, but only seven of them successfully embraced it, the rest were simply blocked by organizational impediments and the constraints of established patterns of thought and action. To cope with disruptive change, Utterback concludes that

“the most important change of all would seem to lie in top managements’ renewed appreciation of the people who build and sustain their firms and in their ability to learn and to adapt to changing and challenging circumstances”

In the same line of thought Quinn has coined the concept of the intelligent enterprise, referring to the transformation of intellectual resources into a chain of product and service outputs integrated into a form useful for certain customers. Quinn (1992) advocates for a service or knowledge based strategy:

“the key lies in maintaining strategic focus while disaggregating. This does not necessarily mean a tight focus on a limited set of products. Products rarely provide a maintainable competitive edge today. (...) True strategic focus means developing a selected set of knowledge factors, databases, and service skills -of particular importance to customers- in such depth that the company
becomes “best in world” at providing these to customers. It then concentrates its resources on these activities, and seeks best in world partners (or performance parity) in other areas by careful benchmarking, process updating and outsourcing to others when it cannot reach best in world status internally.”

Again 3M provides a good example of a company that has grown for decades using such a strategy: application of its knowledge base and service competencies to its three or four “historical technologies” (abrasives, adhesives, coating-bonding—and non-woven) combined with its unique innovative systems and a broad based distribution system. Also today many automotive firms see themselves as intelligent enterprises, focusing on knowledge-based services (such as design, R&D, marketing and information systems), and disaggregating production (outsourcing many non-core activities).

This type of strategy raises the issues of networking and partnership, maintaining control when outsourcing, adopting defensive positions to protect core competencies and talented people, which are beyond the scope of this paper. What is important to retain is the fact that people and internal organization are key to deal with disruptive change and, for that, focusing on a few and well defined core competencies is most helpful.

3. The case of leading companies in Spain
The literature reviewed above includes analysis of many companies, mainly in the US, and complete sectors, mainly those more affected by disruptive new technologies in recent times (e.g. computer hardware, disk drive, microprocessors, photography). Also conclusions are drawn from innovations in a more historical prospective, in sectors such as typewriters, ice and refrigeration, lightening and plate glassmaking (Utterback, 1994). Next I want to identify issues of how some leading Spanish firms, in different sectors, deal with innovation and creative destruction. It is by far not an exhaustive analysis, the main purpose is twofold: first to relate the questions reviewed in section 2 to the Spanish business environment, second to identify issues for further research.

For the purpose of writing this paper I held interviews with top executives and specialists at four leading companies in different industries, these were:

- **Almirall Prodesfarma**, which calls itself the first Spanish pharmaceutical multinational company, the result of the merge in 1997 of two family-owned
pharmaceutical companies Almirall and Prodes. It has six daughter companies in Europe and two in Latin America, it has a commercial presence in more than 80 countries and bases its development in products resulting from its own R&D (currently representing 60% of sales).

- **Bimbo**, the traditional market leader in fresh (toast or English) bread\(^3\) (60% share), currently part of the Sara Lee Bakery Group following the acquisition of Earthgrains. It is the most significant operation of this group in Europe and, as such, it has a strong position to set its own strategy for growth and market development.

- **Repsol YPF**, the energy: oil and gas Spanish multinational. It is the largest Spanish company in terms of turnover and third in profits (2002). It covers all stages of the oil production value chain: exploration and production (E&P), refining (refineries in Spain and Argentina) and marketing (R&M). In gas is the leader in Spain in LPG (*butano*) and is a main shareholder in Gas Natural, the specialized natural gas company, also leader in Spain and Argentina. The oil activity of Repsol YPF accounts for 80% of its profits and over 90% of sales.

- **Santa & Cole**, a company established in 1985 with the vocation to become a good translator of the creativity of designers and architects and the market. Today a leader in lamps, furniture and urban furniture; distributing household products through a network of shops (only a few are owned) and selling street furniture to townships. A business, similar to book publishing, in which author policy and management of property rights is key.

In addition, my experience of over twenty years as business executive in the food and editorial industries, allows me to relate the issues identified bellow to the Spanish business environment.

### 3.1 Incremental more than disruptive innovation

In Spain public plus private investment in R&D represents less than 1% of GDP (compared to 2.9 in Japan and 2.4 in the US). Spain's competitive advantage in the European and world scenes has traditionally been based in cheap labour, not in innovation capacity and human capital. Many sectors are lead by locally established multinational corporations (the leading consumer foodstuffs company

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\(^3\) In Spanish "pan de molde", toast bread selling in supermarkets not on bakeries. The Spanish supermarket-shelf bread market I about a tenth of the total market.
is Nestlé, the leading automotive is Renault, the leading pharmaceutical is Pfizer, the leading electronic is Sony, the leading computer is Hewlett-Packard, etc.) which is a confirmation of the country’s labour cost competitive advantage and also part of the explanation why, in terms of innovation, Spain is a follower rather than a leader.

Leadership of Spanish companies occurs typically in former monopoly and protected sectors, including utilities (Telefónica; Repsol; Endesa; Renfe and Iberia –rail and air transport; BSCH and BBVA –banking; etc.) These, except for communications, are not sectors subject to disruptive discontinuities in recent years.

Repsol YPF is a good example. Almost all the innovation effort is targeted to incremental improvements: process optimization and product development, and only a portion (around 8% of the budget) is allocated by the corporation to projects of risk (to use the company’s term). For Repsol it is important to be aware of development work done by third parties: it prefers to buy oil wells rather than explore, to adapt refining technologies of others -according to the types of crude oils to be processed- and improve them internally. Concerning product development it has to follow, and influence, European regulation in order to adapt existing products to the requirements (unlead, additives, HDS, environmental specifications, etc.) Development efforts in alternative non-fossil and renewable energy sources, such as biomass, solar and wind power or hydrogen fuel cells, are almost insignificant in Repsol today, the company’s sees its core business in precisely fossil fuels.

The question relating to our subject is: how will Repsol face the foreseeable substitution of fossil fuels by renewable new sources, be it due to regulation or economics as extraction becomes more costly. In which technologies to bet, as a producer and distributor, how to ensure access to the original sources ? It seems to me that such questions fit well the type of growth strategy options mentioned by Trigeorgis. In such way one could view Repsol’s pilot project with Madrid’s Metropolitan Transport to run a small fleet of buses powered by compressed hydrogen. The value of the project lays not so much from directly expected cash

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flows as from future growth opportunities in a technology that represents a new paradigm compared to current energy products from Repsol.

3.2 Integrating R&D in business strategy

New product development and patent protection are key for the pharmaceutical industry, this is one reason why size matters. Not only in terms of resources devoted to R&D also in reducing time to market of new drugs. In a company such as Almirall Prodesfarma (APF), which devotes close to 10% of sales to R&D, but whose size is small in the global scene, deciding on its therapeutic focus is strategic: which pathologies to investigate. It currently centres its development activity in the cardiovascular system, the digestive system, the respiratory system, the central nervous system and the musculo-skeletal system where it has drugs of reference in the market. This is a very fragmented market, in terms of companies present, in which APF holds a 6% market share.

When new drugs are investigated one may find drugs with different applications to those researched, or with very narrow applications that prevent it from being marketed (orphan drugs), or simply not achieving good enough results, moment when a research project may have to be killed (known in the industry as attrition rate), in this case there is no drug to enter the development phase (clinical studies and approval for registration). In Almirall Prodesfarma there is a systematic procedure to evaluate projects and set priorities, and also the therapeutic focus is regularly evaluated.

In this sector firms tend to patent new products developed and maximize the time the product can benefit from this protection, although the fact that the patent is made public, stimulates close imitations and alternative products from the same chemical molecular family (the knowledge paradox of value at work). When sales decrease, and the regulator permitting, products are killed (production is stopped).

In such an environment, the internal process by which resources are allocated, priorities are set and projects are discontinued is critical, specially as it has to relate to real market needs and integrate information from a very competitive market place. Precisely the way that individual laboratories are equipped to perform this function is what makes a difference in performance.
3.3 “Know-how of difficult assimilation”

Very often what makes a company different is not so much its products as its own way to carry the activities it does, in words of Javier Nieto (President of Santa & Cole): this becomes know-how difficult to assimilate by a competitor. This company has achieved a unique business model, mix of originality in its products and strength in marketing and distribution, as a result of a strong commitment to editing objects of functional and aesthetic value. The whole organization at the service of this purpose: caring for the authors, organizing production with subcontracted partners (so that an own industrial infrastructure does not limit the type of objects to be produced), and proximity to the customer.

The editorial activity is innovative by definition, in this case every object selected is born because it has been selected, it will become a product and it will be revealed to other eyes. The process from selecting a designed object to distributing it and making it known to potential buyers is precisely the core activity of Santa & Cole. In the process to develop such a business many choices had to be made in terms of incorporating products to the catalogue. Internal selection procedures were helpful in the selection process, for example by discarding products that were produced as commodities and thus did not incorporate a differentiated value. This company has also managed carefully intellectual and industrial property rights.

This example shows that knowledge can become an asset from which future profits can be derived, in a twofold path: by protecting these assets (and thus exclude competitors) and by developing internal processes which are difficult to assimilate by others.

3.4 New focus on creative ideas

The food industry, and the bakery sector in particular, may not seem prone to disruptive innovation as the perception is that it has not been affected by discontinuities in technological processes. Certainly the revolution in the information technology has not affected all industries similarly. For a company such as Bimbo, market leader with a traditional product for decades, innovation and differentiation is a real challenge. In fact the brand itself has become today an important (and differential) asset. Should it remain a bread brand?
By focusing on bread again, after a period of attempts to imitate products in the confectionary category, the company has achieved new growth. This has mainly been due to the launch of the “crust free” product, now copied by other competitors; overall sales of fresh bread in supermarkets have also increased as a result. (In the early 1990s the fresh bakery sector -bakery sales not supermarkets- also increased after a long period of stagnation due to new speciality products and the transformation of traditional shops in boutique type of shops). But all these are incremental improvements. Is there a need for more disruptive innovations?

Such innovations tend to be associated with disruptive changes in the industry or the technologies used. What has been changing over time is the behaviour of consumers and the structure of the households in Spain. If Bimbo sees itself as a service company to improve the life of consumers -as its President, M. Lladó, claims- and not merely as a bread supplier, then new horizons open to investigate opportunities –for example- in ready made, pre-cooked and convenience foods. Bimbo’s capacities in marketing and distribution of perishable products, in addition to the brand reputation, can certainly be valuable assets in new and possibly unknown domains. Today the company is trying to place innovation at the centre of its strategy and has launched the “open ideas” initiative to stimulate all employees to participate in generating new product, packaging and branding ideas.

4. Discussion
I will now discuss what I consider the more relevant issues to generate disruptive innovation in the Spanish business environment, thinking in terms of individual firms.

4.1 Challenge existing mindsets
New business models have been developed in mature industries which were unforeseen years ago, for example low cost air transport and furniture retailing. The innovations came from newcomers such as Southwest airlines, Easy jet, Ryanair, Ikea or Santa & Cole. These newcomers positioned themselves in a different market than their established competitors. Low cost airlines see themselves in the business of transporting people, competing mainly with
terrestrial transport (car and train), not exclusively in air transport. The newcomers in furniture retailing propose a certain type of lifestyle well beyond the functionality of the objects they sell.

Established companies do not seem well equip to address these type of questions which challenge what may be considered the existing paradigm underlying the company’s main activities. Is it a question of (excessive) focus?, of lack of strategic thinking ?, of excess of hierarchy and inward looking? Spain, a country who only joined the increasingly liberalized European market in 1986, there is no tradition to export and specialize in the international scene, except for some traditional and labour intensive activities such as leather and shoes, Mediterranean agricultural products, etc. Many firms have dealt, over time, more benefits from weaving political influences (gaining licences to import and or produce, obtaining privileged rights or protective legislation) than from exploiting advantages resulting from innovation or investments to gain efficiency. Not surprisingly, when markets opened and became more global, Spanish private investments turned more to the area of political influence (Latin America) than to Europe. Changing mindsets in the boardrooms of the largest and most influential Spanish companies is still a pending business. And, when not the case, then there often is a middle management group more concerned with maintaining their influence and status quo than contributing to the company’s strategic advancement.

Questioning the basics of the existing business model is not difficult, simple strategic SWOT analysis deals with that, what is really difficult is for a successful company to really activate alternative policies to what might be considered “politically correct”, potentially cannibalising existing products or undermining entire business units. It is not possible for a given manager to serve two conflicting purposes, therefore I agree with Christensen when he recommends creating an independent structure within the firm or even a brand new unit (from scratch or by acquisition) to concentrate on new and potentially conflicting activities.

Cultural change must be stimulated and managed by top management, and this group has to recognize the strategic dimensions of action, wherever it is promoted from within the company or from outside. That was according to Burgelmann one
of the success factors for Intel to switch activities. This leadership and recognition often requires *unlearning* argumentations that were valid in the past but might be outdated now, openness to change mindsets begins with top management.

### 4.2 Cultural transformation

Corporate culture is a set of values and processes that helps the organization to operate and survive in a changing environment. Rooted in the company’s culture, employees take responsibility and act according to what they perceive to be the general interest of the firm. Culture is collectively perceived but manifests itself through each individual. Several authors have characterized the type of leadership observed in the larger Spanish companies as “patriarchal authority”, based on hierarchy, centralization of decision making and control (see Casado 2001 and Lansberg 2002). I sustain that competing in a more open and global market requires less hierarchy, more decentralization of decision making and structures geared towards business and personal development. In this sense, a cultural transformation is needed in many companies.

To lead this type of transformation, top managers require competencies such as providing a shared vision, become a role model (to continually renew personal learning), accept sharing executive power (decentralization) and be ready to deal with conflict of interests, stimulate teamwork, manage by objectives and results. Today it is very difficult for a given company to remain for long in a –somehow-protected market niche, in spite of patents and property rights –also because these have an expiration date-, they need constantly to search for improvements and innovation. This is very much the underlying assumption for the need of a learning organization (for a good overview of the subject see Teare and Dealtry, 1998). There is a big difference between companies that learn –more or less accidentally– from their own experience, and those that systematically question their activity in search of improvements or even new strategic venues. Learning organizations develop a capacity to anticipate change and explore the potential of its individuals and the organization to improve performance.

In the well-established companies analyzed I have not observed Boisot’s S-learning model, rather an organizational structure (with Technology Centers and R&D departments) geared towards product development and process improvements.
closer to the N-model. In my view the concept of disruptive innovation has not jet been bought-in by many large companies in Spain, nevertheless we begin to observe it in young companies and in some younger generation managers under influence of multinational groups with a culture that already incorporates such values.

4.3 **Enhance organizational strengths**

A firm may be born with a product (Bimbo, some pharmaceutical companies), or a concept (Santa & Cole) and, in order to develop it, it generates processes and a set of competencies. Overtime these capabilities are more important for the company’s growth opportunities than its original portfolio of products. Product portfolio should not be a limiting factor when focused strategies are at work, rather the competencies a given organization is best at. Especially in the *information age*, with greater possibilities than ever before to establish real networks of externally linked suppliers or partners, concentrating on core competencies does not imply concentrating efforts in a few profitable products. On the contrary it implies to use these capabilities to maximize the utility to customers. Therefore, defining a company’s core business is a more complex and critical task than it apparently seems, because -again- the important questions are asked at this stage. Such us:

- in what market are we operating ?, from our cases: oil or energy; bread or ready made food; drugs or health care; furniture or design and life style.
- what are the activities we know to do best (collectively, not based on one individual) ? and those we are specially good at (compared to others) ?, designing products, understanding customers needs, organizing the most efficient value chain, converting ideas into products, managing by projects, etc.
- by developing those, can we achieve differentiation and competitive advantage in the face of competitors ?, this can either be attributed to special skills, ability to reduce or absorb complexity, protected property rights, real cost advantages, etc.

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4 "The organization in the Information Age is viewed as an information-processing system, a nexus of human information processors (or a system of networked computers) who assimilate information from the external environment, match it with information and knowledge that were accumulated within the firm, and act on it" (Mendelson 2000)
These questions tend to arise with a sense of urgency when budgets are not met. In my view companies should learn to compete with themselves, even - and especially - when they are successful. In this sense the PepsiCo philosophy "find a better way" (which Lladó is translating at BIMBO as "what have I done differently?") is helpful. Results are of course important, but it is also important to have the stimulus of continuous improvement ... against the self. Unfortunately this sense of excellence is not rooted in the Spanish mentality.

### 4.4 What about creative destruction?

I observe few cases of destruction of knowledge due to innovation. When production is stopped for a given product is usually due to exhaustion or maturity, often a new product has been developed by the same producer to serve the same customers, but rarely is due to a provoked shift to a completely different new line reaching new customers and opening new market opportunities. Most companies fear cannibalization, confirming Foster and Kaplan’s "cultural lock-in" concept.

In the cases analyzed we observed different types of product cannibalization: due to maturity and a superior new product (drugs), due to requirements imposed by environmental regulations (super gasoline to unlead super), due to market segmentation (crust free bread partly substituting the traditional product); none seem to be due to disruptive innovations produced internally in the firm. But I have observed disruptive new strategic concepts, not from established firms but from newcomers.

Two aspects seem key to me for top management to become aware of growth opportunities in times of rapid technological and customer behaviour changes. First, building scenarios for the company under different assumptions. Evaluating such scenarios, not only in terms of probability, but also in terms of requirements (new capabilities, investments) and alternatives to respond proactively, would allow identifying strategic priorities. And the real options approach becomes then very useful to consider specific action plans. When Shell says (advertisement in *The Economist* of September 13th, 2003) that “by 2050 nearly one third of the world’s energy needs could come from sustainable and renewable sources” it means that it is getting prepared to affront such a new situation (see Shell International, 2002).
Second, involve the people of the organization in such way that creative ideas can be explored, shared and developed into projects. This is again a matter of culture, leadership and organizational design (see Nonaka, 1991). For many companies this will represent a change. There is a great deal of literature on the critical aspects change management: the role of leaders, how to gain support for change, dealing with a certain degree of chaos, managing information and knowledge. In short, we are searching to build an organization capable of generating value from its human capital, and in that differentiating itself in the marketplace.

Innovation in strategic positioning, product development and business processes is key for any given business. Companies should be aware that, in the path to develop such innovations, tensions with the existing strategy, products and processes will arise, they need to be dealt with, not used as a killing argument.

5. Conclusions
Dealing with these tensions between potentially conflicting interests within the company, in essence the creative destruction process, has proved to be very difficult for most well established companies. In concluding let me point to a few constructive ideas which I find provide grounds for action and also for further empirical research.

- *Use productive conversation to drive innovation.* Conversations, in which ideas need to be argued for and debated, are a good vehicle to drive innovation within a company. It requires adequate context and degree of freedom to engage the appropriate people and stimulate their creativity and willingness to share.

- *The learning process also implies unlearning.* Do not confuse with the pejorative “we are trying to reinvent the wheel”, “we tried before and it did not work”, of course companies learn from their own experience. Often, years later, new knowledge is generated, the context has changed and there are now different and better ways to achieve similar results, better then be aware that some of the accumulated knowledge is no longer useful.

- *It is often advisable to create a new or a redundant organization.* Organizational structures can work vertically and at the same time horizontally on specific projects, redundancies may be advisable to stimulate knowledge
generation and involvement of key persons in different tasks. When interests are in conflict it is then recommended to create or acquire a new organization.

- **Stimulate, do not prevent, internal competition.** It may become a matter of corporate culture: constant benchmarking of results of different persons and business units, do not hide internal costs by off-market transaction costs, even establish competing teams for the same project.

- **Ensure interaction of the organization with the environment.** Not limited to customer and supplier relations, but extended to the organization dealing with customer care and processing queries and complaints, being aware of emerging technologies, scrutinizing competitors and market trends, fact finding missions, etc.

- **Reduce uncertainty vs. absorbing uncertainty.** The capacity to reduce uncertainty, being important as it is to manage complex organizations, has achieved a new dimension with the emergence of the information age. There is now the risk of infoxication (excessive information). Information needs to be managed and we now have the option to absorb more of it by such activities as teamwork, employee empowerment and networking. Thus the spectrum of our strategic focus is wider.

The dynamics of managing large entrepreneurial (and often bureaucratic) organizations are evolutionary and somewhat slow. The present and the past is a continuum with a view in the future. As complexity and specialization increases, companies need to make choices about their focus and their differentiated capabilities. Large Spanish companies, of the type overviewed in the second part of this paper, should position high on the agenda to develop organizational competencies to become more innovative and at the same time prepared to face discontinuities in their core business.
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