WHEN DOWNSIZING REACHES THE BRAIN OF CREATIVE AND R&D TEAMS

A Longitudinal Study of the Effects of Slack Reduction on Creativity

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ABSTRACT

This paper shows how downsizing, conceptualized as a reduction of slack resources (human, financial, time & space), affects the creativity of teams over time. Drawing in two in-depth longitudinal qualitative case studies (a music label and a pharmaceutical laboratory) we show that the effects of downsizing on creativity are related to the type of slack reduction involved and the frequency of the reductions in slack over time. Specially, the effects are modified by the manner in which downsizings are implemented. A teams understanding of the legitimacy of downsizings, work redesign and the role of the leader appeared relevant factors to explain the effects on intrinsic motivation, work environment and the capacity of teams to change and adapt over time. We conclude that frequent downsizing events are deleterious for creativity. One of the main effects are less risk taking and having less "thinking time and spaces" for both individual and collective creativity. Also, we show that the different slack dimensions are connected.

Downsizing, slack reduction, longitudinal, R&D and creative teams

INTRODUCTION

Downsizing has become integral part of organizational life and R&D and creative industries have not been the exception. During the last ten years, pressured by globalization, technological advances and growing competition, an increasing number of R&D and creative intensive firms have started to downsize their businesses. The 2008 financial crisis has worsened the situation. Hence, tightening belts, getting fit, building-down, downscaling, rationalizing, rightsizing, resizing, slimming, compressing, delayering, demassing, downscoping, rebalancing, wastage, retrenchment, disemployeing and dejobbing (Cameron, 1994b and Redman and Wilkinson, 2005) plans have been implemented.

Seeing from the outside it would appear that the fact that companies downsize is not surprising since the "rational" behind the strategy is to maneuver, to reduce the existing resources possessed by an organization, in a way that they can "fit" the business environment within which they operate to remain competitive (Cheng and Kesner, 1997). However, in practice downsizing plans are not easy executions. Beyond downsizing plans – which are recorded and given large media coverage – organisations and individuals who are affected undergo profound transformations that are painful for those who experience their effects, those in charge of making and implementing the decisions, and even those who "survive" (Beaujolin and Schmidt, 2012). In the context of R&D and creative companies, whilst implementing thosed downsizing strategies, the management is trapped between three requirements. On the one hand, the requirement to reduce cost, generate highly creative and profitable R&D outcomes and, on the other hand to provide creative and R&D teams with sufficient time, human and financial slack resources as major ingredients to be creative (e.g., Amabile, 1996;Kratzer et al., 2007).

Downsizing in the context of creative and R&D organizations can take different forms. This argument is in line with Cameron (1996), who defines the term downsizing as 'a whole range of activities from personnel layoffs and hiring freezes to consolidations and mergers of organizational units'. R&D and creative organisations can get smaller, not only by ***reducing*** the number of workers dedicated to research and creative activities but also by ***rationalizing*** the amount of investments dedicated to exploration and exploitation activities, by ***compressing*** time and spaces, by ***downscoping*** the spectrum of research activities among others. It is observed that in practice, when practitioners implement downsizing strategies, implicitly or explicitly they attempt at reducing slack, wich we define as resources in excess of those required for producing necessary outputs (Bourgeois, 1981; Cyert and March, 1963/1992).

It is suggested here that in the search for an increase in productivity or simply to face the threats of the environment, managers will focus on reducing slack as a first priority. Cyert and March (1963) support this view when they argued that, in times of stress, slack is reduced, providing part of the shock absorption to accommodate a reduction in profits, for example. "Since organizations do not always optimize, they accumulate spare resources and unexploited opportunities which then become a buffer against bad times".Surprisingly, in downsizing research the link between the two literatures hasn't been fully explored. Therefore, ***in this research downsizing is conceptualized as a strategy that directly or indirectly attempts to reduce slack resources.***

Our concern here is with the effects of downzing through slack reduction and their effects on a team's creativity over time. Creativity is defined as the production of something new, original, and useful (e.g. Amabile et al., 1996; Oldham and Cummings, 1996; Woodman et al., 1993). It is analyzed as an individual - collective process that starts in an individual but it develops and takes place in a social context (cf. Becker 1974). Thus, this article focuses on how downsizing (reducing slack) affects the creative mechanisms of R&D (scientists) and creative teams (talent scouts) over time. In a creative business such as a music label, artistic and repertoire (A&R) teams are the "finders" and "developers" of new artistic talent. Although is not very common to state it in that way, there is an artistic R & D in a music label.We consider processes of scientific and artistic creativity to be similar. Gardner (1999) views support the idea that although uncommon creativity can take different forms in different domains when he stated, "People are creative when they can solve problems, create products, or raise issues in a domain in a way that is initially novel but is eventually accepted in one or more cultural settings" (p. 116). Prospects for identifying creativity attributes among scientists, as well as artists, have been explored periodically by various authors (Feist, 1999; Feist and Barron, 2003; Helson 1996), and have indicated a need for further investigation of creativity in these two cultures. Thus, it may be conceptually and practically important to know about how downsizing affects survivor's (scientist and talent scouts) creativity and how they cope with downsizing over time.

The paper is structured as follows. We begin with a theorical review of the link between slack, downsizing and innovation followed by a discussion of the potential longitudinal effects of downsizing on creativity. Then, we describe the research methods and present the results. Finally, we provide the conclusions and potential paths for future research.

THEORETICAL FRAMEWORK

Slack

The conceptual discussion of organizational slack can be traced to organizational theorists such as Barnard (1938) and Thompson (1967) who argued that protecting the core of the organization from rapid changes in the firm's external environment through the use of slack resources was an important role for managers. This definition was followed by Bourgeois (1981) who added that "organizational slack is that cushion of actual or potential resources which allows an organization to adapt successfully to internal pressures for adjustment or to external pressures for change in policy, as well as to initiate changes in strategy with respect to the external environment.

Organizational theorists have already conducted a substantial amount of research focusing on the effects of organizational slack on innovation including behavior theory of the firms (Barnard,1938; Thompson 1967, Cyert & March, 1963: 30), resource based theory (Barney, 1991), resource constraint literature (Baker & Nelson, 2005; George, 2005), and agency theory (Jensen & Meckling, 1976). However, two conflicting views on the relationship between organisational slack and innovation exist in the literature: one view is that organizational slack plays a crucial role in shaping organizational behavior and performance (Cyert & March, 1963; Daniel, Lohrke, Fornaciari, & Turner,
2004; Greve, 2003), including innovation (Chen&Miller, 2007;Nohria & Gulati, 1996) and risk-taking behavior (Bromiley, 1991; Singh, 1986). The other view from agency theorists and organizational economists is that slack is negatively related to innovation as it is unnecessary and a form of inefficiency (Williamson, 1963, 1964; Leibenstein,
1966, 1980; Jensen and Meckling, 1976). They argue managers use such slack resources to further their own interests, for example by empire-building, engaging in unprofitable diversification or R&D projects, delaying exit, or padding
budgets (Williamson, 1963, 1964; Jensen, 1986, 1993; Dunk and Nouri, 1998).In a similar vein, scholars in the resource constraint theory suggests that sometimes "necessity is the mother of innovation," And recent work on organizational innovation indeed provides evidence that remarkable innovation outcomes can be achieved with constrained financial resources (Baker and Nelson, 2005; Garud and Karnoe, 2003).

Downsizing researchers also present mixed results about the downsizing-innovation effects. Some argue that downsizing has no effect and could even lead to improved innovation (Cascio et al.,1997; Bruton, Keels, & Shook 1996; Mone et al., 1998; Love and Nohria, 2005) while others argue that downsizing can reduce organizational adaptability and flexibility (Fisher and White, 2000; Cascio and Young, 2003), reduce innovation (Doughtery and Bowman, 1995; Lawson, 2001), reduce creativity (Amabile and Conti, 1999), reduce risk taking (Cameron et al., 1993) flexibility (Bagshaw 1998), and increase political behaviour (Marks and De Meuse, 2003).

Levels of slack and innovation

More recently, some scholars have moved from the conflicting (good or bad) view of slack and instead they have focused on the levels and types of slack. Concerning levels of slack, Nohria and Gulati (1996) found that the relationship between slack and innovation is inversely U-shaped (∩). When there is too little slack innovation is hampered due to the uncertainty of success, and so experimentation is discouraged. When there is too much slack, the discipline exercised over projects is decreased. Regarding types of slack, the most widely classifications of slack are Bourgeois and Singh's (1983) available, recoverable, and potential slack (e.g., excess liquidity, overhead expenditures, and borrowing capacity, respectively) (Bergh and Lawless, 1998; Bromiley, 1991; Cheng and Kesner,
1997). This distinction is based on the location of slack and how easily slack can be recovered for alternative uses. Drawing from this classification, Geiger and Cashen (2002) took a multidimensional perspective between organizational slack and innovation.They found an inverted U-shaped relationship between innovation and both available and recoverable slack. They also found a linear relationship between innovation and potential slack—the greater the level of potential slack (less debt/equity), the greater the innovation within the firm.Greve's (2003) showed that absorbed slack had a positive and significant effect with R&D intensity.

Daniel (2004) carried a meta-analysis to find the relationship between a firm's slack resources and performance. In his review of 80 empirical studies he provided evidence that a true, positive effect exists between each

slack type and performance. He found that both potential and available slack have a stronger relationship with performance than recoverable slack. This finding is interesting because recoverable slack (e.g., excess overhead) is already absorbed within a firm and, thus, may require substantial organizational change (e.g., downsizing) and time to access (Cheng and Kesner, 1997). In the resource-based view (Barney, 1991; Mahoney & Pandian, 1992), specialized skilled labor, like research scientists and talent scouts, are commonly perceived as absorbed slack, a low discretion or sticky' resource that is tied to current operations which limits its management discretion (Mishina et al., 2004; Voss et al., 2008).

Moving beyond the traditional types of slack

In our review of the literature about slack, we identified earlier studies focus on either financial slack (e.g. George 2005; Kim et al. 2008; Bradley et al. 2011) or human resource slack (e.g., Welbourne et al. 1999; Love and Nohria 2005; Mellahi and Wilkinson 2010) in isolation. In light of the increasing trend toward understanding knowledge workers (Clay-Williams & Braithwaite, 2009; Windsor, 2006), thinking time, space and slack within processes are particularly important and have been underestimated both theoretically and empirically as slack.

Kerfoot (2006) described slack as "thinking time". Recently, Richtnér and Åhlström (2010) operationalized slack as changed possibilities to depart from project deliverables in new product development projects. In their study, they found that reduced slack time created a focus on explicit knowledge rather than tacit knowledge.

Regarding downsizing it would appear that reductions of human and slack reduction indirectly shape the slack time of survivors. This time pressure could be either positive or negative to creativity depending on the level and frequency overtime. To illustrate, a number of scholars posit that, although a small reduction in workforce reduces the level of human resource slack and as a result surviving employees are required to carry out more tasks, the small increase in work load is perhaps surmountable and employees may ably accommodate the new tasks without being sufficiently distracted from carrying out innovative activities (Moore et al., 1996). However, as the level of downsizing increases so does role overload (DeRue et al., 2008; Maslach,2003), until downsizing level reaches a tipping point beyond which surviving employees' ability to carry out the day to day tasks and still be able to innovate, decreases. Similarly, Andrews and Farris' (1972) study of R&D scientists found that time pressure to carry out tasks was related positively to high creativity until the pressure reached an undesirably high level beyond which the relationship became negative. It seems that that at least in the shorter term, the implementation of an urgent sense of time and the imposition of multiple commitments can yield positive competitive and other outcomes. However, it appears that inappropriately frequent or difficult deadlines and other time pressures inhibit creativity (e.g. Bryan and Locke, 1967; McGrath and Kelly, 1986; Peters et al.,1984).

Linking Slack, downsizing and innovation

Research about the effects of downsisizng on creativity or innovation is scarce. Questions related to the effects of employee downsizing on the firm R&D have only been addressed by Bruton et al. (1996), Dougherty and Bowman (1995), Espahbodi et al. (2000). Bommer and Jalajas (1999) for instance, found that the threat of downsizing had a negative impact on the degree to which R&D professionals were motivated by the job and a positive impact on the degree to which and individual was motivated by fear.

Over the last years some researchers in the downsizing field have started to analyze for contingencies. To examine the association between reduction in slack and innovation, past research posits that in the wake of downsizing firms are left with little or no human resource slack (Cascio and Young, 2003; Lawson, 2001; Love and Nohria, 2005) which may have an impact on their ability to innovate (Amabile and Conti, 1995, 1999; Bommer and Jalajas, 1999; Brockner et al., 1987; Dougherty and Bowman, 1995). Nohria and Love (2005), found that each contingency they studied— absorbed slack, scope, and timing—was related to post downsizing performance, and taken together they had quite substantial effects. High absorbed slack firms that downsized proactively using a broad scope approach were most likely to achieve performance improvements. Conversely, low absorbed slack firms that downsized reactively and focused narrowly on employee reductions were least likely to see performance improve.

GAP OF THE EXISTING LITERATURE

Our review highlights that various slack reductions exist and each could have different effects on creativity depend on the type and level of slack reduction. Nevertheless, little is said about the effects over time.Judge et al. (1997) support this view, arguing that it is not the level of slack as such that is important; rather it is the continuity of slack over time. ***In addition, downsizing as a process does not explicitly appears in the downsizing literature and there are very few references to downsizing processes or phases***. Based on an overview of recent empirical research literature on downsizing processes, Datta et al. (2010) also suggests that research designs should be more sophisticated – less static and more longitudinal, seeking to identify non-linear effects, and integrating multiple dimensions.

Especially, no study has been taken combining the following dimensions: ***Human resource slack*** defined as extra team members to work or assigned to a particular project***; Financial slack*** defined as spare financial resources to invest in R&D projects. ***Time Slack:*** Free time enjoyed by the actors to create, it that can be assigned of not.

This research takes these claims as its starting point and seeks to render more concrete discussions about:

- How R&D and creative organizations reduce slack? More precisely, what types of slack are reduced and how a reduction of slack resources, (human, financial, time) interact with the processes and the work environment of creative teams over time?
- Which factors influence/ moderate the effects of downsizing in the creativity of artistic and R&D teams over time?

THE LONG TERM EFFECTS OF DOWNSIZING ON CREATIVITY

Amabile and Conti's (1999) studied employees' perceptions of the innovative environment over three different time periods – before, during, and after downsizing – in a very high downsizing firm. They found that although, overall, large downsizing harmed the innovative environment, the organization started to heal from downsizing after one year. They report that during and just following the downsizing event, creativity significantly declined as employees were not able to obtain resources to carry out innovative projects, and excessive workload limited employees' freedom to work on innovative ideas. They reported that during downsizing innovativeness suffered most where all stimulants for creativity declined and barriers for innovation increased. However, they reported that after downsizing was completed
'the trend seems to be slowly reversing', and over time they observed a recovery pattern as their respondents described it: 'the creativity stimulants are increasing and organizational impediments are declining' (p. 636). During the third
wave of the study (five months after the downsizing ended) the work environment for creativity improved 'to some
extent' and there was 'a high level of sufficient resources and a lower level of workload pressure'. They note that the drop in slack level tended to be absorbed over time (Amabile and Conti, 1999). The results of this study suggest that the negative impact of high downsizing on innovation declines over time as firms rebound from the effects of downsizing.

Similary, Mellahi and Wilkinson (2010) examined the impact of sudden decline in slack as a result of downsizing on innovation over time and found that although downsizing level has a significant impact on innovation three years after downsizing, this impact does not persist. Specifically, their results showed that there is a critical period – two years after downsizing – during large downsizing has its greatest negative impact on innovation. These findings are especially interesting, showing that over time the relationship between level of downsizing and innovation output is more complex than is typically posited. However, the flaw of those studies is that they approach downsizing as an event that occurs in T1 and which effects can be measured in (T2 and T3) in a linear fashion. The crux of the problem is that downsizing practices belong to today's organizational life. Even if the phenomenon is not new (Didry, Jobert,
2010), it has significantly evolved over time, both in terms of motives and in terms of expressions, from major events to permanent practices. In the current economic context, downsizing occurs several times in a period of three or several years. Examining for nonlinearity in downsizing in terms of magnitude, frequency across time and the way it is implemented would allow for greater precision.

For instance, a number of researchers suggest that modest workforce reduction results in changes that are conducive to innovation. These include formation of multi-skilled teams, enriched jobs for surviving employees, and flatter organization structures (Baumol et al., 2003; Love and Nohria, 2005), which may create an internal environment favourable to the generation and survival of new innovative ideas (Hackman and Oldham, 1980; Ross, 1974). De Rue, Hollenbeck and Johnson (2008) examined from a structural perspective three ways in which teams can downsize over time (eliminanting hierarchy, maintaining hierarchy and integrating hierarchy). They found employing either a maintaining or integrating approach to team downsizing to block the behavioral changes necessary for teams effectively adapt to it.In their findings, the fate of a team leader, in terms of both person and position, seems to be an important driver of this relationship.

Concerning reductions in financial slack (Weiss, Hoegl, and Gibbert 2011), showed that there is no significant relationship between financial resource constraints and innovation project outcomes in terms of product quality and project efficiency. Results show that team climate for innovation positively moderates the relationship between financial resource constraints and product quality as well as project efficiency. For teams to innovate under resource- scarce conditions, it is important that an atmosphere of psychological safety and tolerance of mistakes prevails, and that creative thinking is encouraged and supported by providing necessary information and space, not only to cope with financial, resource scarcity, but to profit from its stimulating effects (Finke, 1990; Finke et al., 1992).

Those findings support our view that to understand the effects of slack reduction on creativity over time, frequency, type of slack and the manner in which it was implemented should be jointly considered. We suggest that R&D and creative organizations which reduce human slack involving both structural change and recomposition are less harmful for creativity and find it easier to recover over time. In contrast, practices reducing organizational commitment, trust and empowerement, will have detrimental effects on teams creativity. Also, in the short term, reducing levels of financial slack will have positive effects on the creativity of both R&D and creative teams. Over time, a continuos decrease in levels of financial slack will have a detrimental effect. Finally, we consider other forms of slack to be relevant for teams in this context.

METHODOLOGY

Design and strategy

A longitudinal comparative case study methodology has been implemented and two case studies will be analyzed. One case is about downsizing in DRUGLAB, an R&D laboratory from a pharmaceutical company. The second case study, MUSICLAB studies the downsizing of a music label from the music industry. What distinguishes longitudinal qualitative research is the deliberate way in which temporality is designed into the research process making change a central focus of analytic attention (Holland and Thompson 2002) . The longitudinal case study method is a strategy that allows us to identify patterns so we can build theory (Glaser and Strauss,1967; Eisenhardt, 1989 ; Dougherty,
2002 ; Yin, 2003, Pettigrew, 1990 ; Langley, 1999 ; Van de Ven and Poole, 2005).Our research strategy can be qualified as procedural (Musca, 2006, Mendez 2010), as we monitored and analyzed the evolution of the implementation of downsizing in R&D and creative teams over time.

Target Population and Data Collection

Ten Preliminary interviews took place with the presidents of the organizations and the team leaders of R&D and creative teams in each company, this step allowed us to refine the questions of the questionnaire. Retrospective and longitudinal semi-structured interviews took place at two different points of time. A total of 108 interviews were carried.
All the interviews were recorded, integrally transcribed and analyzed. Each interview lasted for one hour approximately. Interviews took place in the offices of each company. In the first part of the interview, participants were asked about the changes they had experienced in the past years, their work environment and the different slack reduction strategies implemented. In the second part, respondents were asked about their perceptions of the effects of
downsizing on creativity, to give an insight of the moments in which they felt more creative or not, the barriers for creativity. Internal documentation and company reports were analyzed to triangulate the information.

Table 1: Data Collection DRUGLAB

Phase	Date	Sample	Informants
Phase 1	April 2011	6	President, R&D Managers
Phase 2	March 2012	30	R&D Manager
Phase 3	December 2012	29	R&D Manager, team leaders, scientist.

Table 2: Data Collection MUSICLAB

Phase	Date	Sample	Informants
Phase 1	April 2012	2	President, vice president,
Phase 2	June 2012	20	President, vice president, label directors, talent scouts, brand managers
Phase 3	January 2013	20	President, vice president, label directors, talent souts, brand managers

Organizational Context of the Data Collection

Drug Lab	***Music Lab***
Industry: Pharmaceutical	**Industry:** Music & Entertainment
Founded: 2000 (Merger)	**Founded:** 1958
Headquarters: London, United Kingdom	**Headquarters**: New York City, United States
Revenue: £26.431	**Revenue:** $2.7 billion
Owner: Private investor	**Owner:** Private investor
Employees: 97,389	**Employees:** 3,550
Employees in the subsidiary of the study: 70	**Employees in the subsidiary of the study:** 130
% of workforce reduction during the period studied (2008- 2012): 30%	**% of workforce reduction during the period studied (2004-2012):** 48%

MUSIC LAB

Context: The recorded music industry has been witnessing declining markets in the recent past. Piracy has been negatively affecting the music industry through many years and especially since the advent of digital technologies. The latter have also dramatically changed the way music is consumed and marketed.

Music Lab is the smallest of the major music labels. The company is the result of two mergers that took place in 2001 and 2005. In 2011, the company was sold to a pole of investors. The company is involved from discovering and developing talent to producing albums and promoting artists and their products.

Organization: In 2012 Music Lab is structured with a president at the top, a general direction team, support functions (360°, digital, IT, finance, legal, HR) and three labels: Local, International and urban. Each label has a different scope. The local label discovers and develops French artists whilst the international markets and promotes international artist locally. It manages the back catalogue, the compilations. The Urban label is focused on pop and urban music. The International and Local labels are structured with three hierarchical layers: at the top level there is a general director, the middle management team is composed of the artistic directors and the marketing a promotion managers (10 people). At the bottom level the team members who belong to each unit (20 people). The urban label has only two layers, the general director and the artistic, digital and marketing team members (6 people). The artistic director teams find the artists and the brand and marketing managers develop and promote them.

Culture: Respondents described Music Lab's as a young and family organization. The average age is 35 years old. It has an informal culture; most of the workers are passionate for music. There is an environment of trust, there is no internal conflict, and there is a team philosophy. People talk, communicate and help each other. It is a result- driven and frugal oriented organization. There are not clans. The president of the company is highly appreciated by the all the people and it is he who inspires the employees. The core management team has been working together for a long time. They all have a link with the president personal, intellectual or affective. The president exchanges directly with the people concerned, he is respected for his music knowledge and informal, expert management style.

DRUG LAB

Context: The pharmaceutical industry has been having health issues since the last ten years. From the outside, it would appear that pricing pressures, regulatory requirements, legal entanglements, inroads by generics – are the causes of increased costs and reduced revenues and profits. However, a variety of forces are collectively responsible for the drop in the number of blockbuster drugs launched every year and the overall slide in R&D productivity. Those commonly cited include tougher challenges (the diseases easiest to treat or cure have been tackled), greater regulatory requirements, and the skyrocketing costs of every aspect of R&D, from producing a case report on a patient in a clinical trial to building a site. Another culprit is the enormous size and complexity of the traditional pharmaceutical R&D organization. The business model of Big Pharma is straightforward. New products are discovered, developed, launched, and protected by various patents. The problem is that doing this has proved increasingly difficult over the last ten years. As a response, in 2008 Drug Lab's headquarters, decided to break its R&D organization into small cross disciplinary groups, each of which is focused on a family of related diseases (Discovery Peformance Units or DPU').

Organization: In 2012 Drug Lab is one of the two R&D sites in the company that is no longer specialized in a specific disease. It is a flexible performance unit (FPU) that provides support in all phases of research, from target identification to proof of concept in humans (clinical trials phase II) to other DPU's. Functionally, the site is organized mainly in two departments. Biology and candidate Discovery (which includes chemistry and drug metabolism & pharmacokinetics (DMPK), the site also has support teams of pharmacologist, computer scientists and experimental medicine. Hierarchically, the group is led by a director. Below the director there is a leadership team (2 managers of each department), and the external partnerships and scientific information managers. One level below, the teams of scientists (41) and at the bottom level the research associates and the technicians (10 people).

Culture: Drug lab has a culture marked by hierarchy, scientific elitism and excessive challenge. The average age is 45 years old and most of the people have been working there for almost 15-20 years. Historically the site was directed by a Biologist who gave his name to the site and who sadly died since. He was respected by his expertise, authoritarian, aggressive and paternalist style. At DrugLab Everyone knows each other but it is not a family culture. There are clans and divisions, especially between the biology and chemistry teams. Communication is conflicting and formal. The site director and the chemistry leaders are not recognized by the teams as leaders.

DATA ANALYSIS

We proceed in three steps: 1) Organizing the data to get the case story and in parallel coding and production of a draft representation of the process, 2) Data analysis of each case individuallly.3) Comparison of the findings of each case study and analysis.

1) Data reduction and sorting to draw a retrospective story line

o Data reduction is the preliminary stage of the analysis and consists of selecting, focusing, simplifying, abstracting information.

o The idea of data sorting is to get the big picture of the phases and the timing of the downsizing process, to build a retrospective story line. To find and characterize the various phases, to select the key downsizing strategies and events, to identify the mechanisms that cause the movement and adjustment, the factors that intervene and the ingredients of the processes. The data was explored cross-sectionally (synchronically) and longitudinally (diachronically).

Production of a graphic dynamic representation of the process putting the relations between the different sequences, bifurcations and drivers and downsizing measures were created (see result section).

2) Data Analysis and synthesis of each case individually
Since our research is longitudinal and theory building, the analysis process contained a constant interplay between theory and data. The types of slack reduction and the key factors emerged and evolved over time (from the literature and the field).

o A comprehensive analysis of the story line and the effects on creativity for each case was carried. We first perform a content analysis. The verbatims about the effects of downsizing on creativity were identified and classified by type of slack related: human, time, process and financial[1]. Over time, two new categories of slack were introduced (space and processes)
o After, the factors inhibiting or allowing for creativity over time were also identified. A synthesis of the most emerging factors was put in tables per case.
o Then, an evaluation of the effects per phase/case was performed. The idea is have a visual representation of the effects and their evolution over time.

3) Comparison and analysis of effects of downsizing on creativity and the key factors that intervene.

The last stage consisted of comparing the effects of each case, the key factors that intervened. The idea here is to provide a basis analysis so the results and discussions can be written.

1 Following the definitions of slack provided in the theoretical framework.

RESULTS Table 1. MusicLab: Changes over time

		market in crisis		Digital & 360° Strategy I
	2004	2005-2006	2007-2010	2011-2012
	The company is acquired by a group of private investors. The company becomes publicly held. The label was selling but operating costs were high at there were no profits.		Fall of the record market hits France. The urban music label is not delivering results.	The company is acquired by a priv not longer listed.
	The restructuring of 2004 had 2 objectives, to reduce costs and to transform the company. To have smaller teams with a commando spirit and shift to a digital culture.		The president decides to create a 360° focus in the company, to diversify.Monetization of artists and audiences. The objective is to sign less artists but to spend more time developing them.	To increase digital sales, touring a monetization revenues. To increas and to build a repertoire heritage.
of	An interim president in charge. The successor supervised and designed the plan in the backstage. The management team participates designing the changes. After announcement there was communication about the changes, its implications and the potential opportunities.		Communication and sensibilization about the need of a 360° mindset. No communication about label closure. The touring companies are kept as separate entities and they are neither integrated with the label or together.	Seminars are organised with the to discuss the implications of the 360°
	Dismissals of the local label director. Dismissal of 70 people and recruitment of 20. The target were the people with higher salaries. A new president arrives. A new artistic director is hired to manage the local label.		The artistic director of the classic label and the team is moved to the back catalogue. Creation of a 360° department. Dismissals of five people of the Urban label including the artistic director. The company stop recruiting interns.	In 2012 an new label is recreated an recruited. The HR director is dismissed and re
	Cost Reduction. in all the departments. Fixed costs reduction.The company buys a urban label.		Reduced investments in research and development and expenseses in recordings. Acquisition of France's leading tour production, promotion and booking company. Salaries are frozen.	Reduced investments in research a and expenseses in recordings. Cash flow focus. Salaries are frozen. The touring companies start report Label standards.
	No time pressure to deliver		24/24 hours jobs. Increase of the time doing administrative tasks.	24/24 hours jobs. Increase of the ti administrative tasks. Open Auditions sessions take plac recruit new talents.
	Each label was relocated in each floor. The company is located in a central location in Paris. Teams meet outside work.		The touring companies are based in a different location.	The two touring companies moved building.
	Divided the local and international labels. Closed the jazz label and merged it with the classic an varities label. The catalogue and compilation labels were closed and given to the international label. The roles of the marketing product managers changed. The became brand managers with a 360° vision. The comercial and physical activities were reduced by 30%. The new people recruted is focused on digital activities.		The classic label activities are transfered to the back catalogue. Artists contracts are transferred to the local label. The artistic and brand managers are in charge of the administrative tasks performed by the interns. Interaction among 360°, artistic directors, brand managers and touring companies start.	The activity is to produce artists no

Table 2. MusicLab: The Effects of downsizing on creativity over time and the key factors signaling improving and deterioration

Time ——>		2004	2007-2010	2011-2012		
The effects of slack reduction on creativity over time	Sequence	Phase 1 Downsizing	Phase 2 360° Touring & Digital Focus	Phase 3 Digital & 360° Strategy Blossoms	(++)Factors Signaling Improvement in Creativity	(--) Factors Signaling Deterioration in Creativity
Slack Reduction Strategy	Dimension affected					
Human	Intrinsic Motivation	Medium	High	Medium	Success in the results, hope Passion for the job Leader sympathy	No financial rewards and missing perspectives of evolution. People leaving the company
	Morale	Medium	High	High	Strong support from team leaders	
	Trust	High	High	High	Strong support from team leaders, Transparence in the communication Clear vision Changes are legitimate	Bad communication
	Conflict	Low	Low	Low	Family Culture Sharing a common goal Cooperation	
	Freedom/ Autonomy	High	High	Medium	Empowerment Vision, consistency of objectives over time	
	Team Spirit	High	High	High	Sharing a common goal, an open culture. Leader support No conflict between teams/ No ego problems	
	Work Redesign	Medium	Medium	Medium	Challenge in the activity Gradual changes	Long transitions
	Interactions/ Informal Networks	Medium	High	High	Recruitment, turnover Good communication	
Time	Time Pressure	Medium	High	High	Passion Challenge in the activity	No time for creativity less people Multitasking frequent interruptions.
& Space for creativity	Space for creativity	Medium	Medium	Low	Meetings and reunions outside office working hours	No physical spaces for discussions, brainstorming and thinking
	Physical Proximity	Medium	Medium	Medium	Private offices Family culture Central Location	
	Satisfaction with office layout	High	High	High		
Financial	Levels of Screening and evaluation	Medium	High	High	Concentration and focus in key activities	More processes and people involved in decision making
	Tightening belts/ Cost Reduction	High	High	High	Moderated rise in expenses Good work environment Passion for the job	No support staff to perform admin activities. Decrease in salaries makes people leave the organization.
	Risk Taking	Medium	Low	Low	Absence of resources to experiment	Excessive focus on the essential activities. Idea Hording/ Fear
	Budget for R&D activities	Medium	Low	Low	Concentration in key investments	Signing fewer artists Less investments and expenses in marketing
Work Environment	Degradation of work environment	Low	Low	Medium	A strong leader, trust, absence of conflict, informal communication,	

Table 3.DrugLab: Changes over time

Drug Lab	Phase 1 Downsizing & moving to new building	Phase 2 Dismissals of Team Leaders	Bifurcation Business Plan Failure	Phase 3 Change to Flexible Performance Units & Realization
Time ⟶	2009-2010	June-June 2011	June-Dec 2011	2012
Context	Pipelines are drying Meet global R&D Requests	To layoff people that questioned the site director initiatives and the therapeutical choice	The site does not deliver the expected business plan results to the Discovery investment board.	Global R&D request to site director to rethink in a new mission for the center.
Objective	Reduce the size of the unit and change the hierarchyical culture	Break the hierarchyical culture		The make the site a flexible unit that supports R&D of other organizations
Management of Implementation	No participation of the teams in the definition of the new organization. Communication lasts seven to six months.	Unclear reasons for the dismissal.		Involvement and mobilization of all the teams to create a plan for the new organization. A seminar is organized with the team leaders and the research teams for reflecting about the new organization and revisiting the past
Ingredients ↓				
Human	Downsize of all employees and retirees of 20%. No structural changes or job definition. Target were scientists.	Dismissal of the Biology and Chemistry leaders, downgrade their self who becomes director of the chemistry department. The site director temporarily takes the lead of the Biology team.		The director of the clinical department was dismissed. No dismissal of scientists or team members.
Financial	All units started to work with a business 3 years plan (2009-2011)			Global R&D stop financing research in the old therapeutical area. The site serves the other units within the organization and cross-charges.
Time	No time pressure to deliver	The pressure to deliver the business plan results starts increasing		Workload increase for the chemistry, DMPK department. The biology department has no projects.
Space	Demolished the old building and move to a more modern one. The capacity of the new building is 200 Move to open spaces.	Put partitions in the open space.		Gym, courses, morning and baby desk activities are launched to increase team cohesion. A working group is created to work on workspace issues and redesign.
Activity	The center is focused in one therapeutical disease. Work organized by project teams and programs.			The site works on projects that come from outside the organization. Only 10% of the biologist have the autonomy to explore on new research programs. Shift from programs to small tasks
Process	Each program has total freedom. No follow up meetings and control.	Each program has total freedom. Many unnecessary meetings.		A lean R&D group is created to audit the research activities. Processes to evaluate and assign requests are created. A weekly review process takes place in the control room. The activity of the flexible performance unit is clear and processes to manage requests starts. Outsourcing increases

Table 4. The Effects of downsizing on creativity over time and the key factors signaling improving and deterioration

The effects of slack reduction on creativity over time	Sequence	Phase 1 Downsizing	Phase 2 Mid-Downsizing	Phase 3 Change to Flexible Performance Units & Realization	(++)Factors Signaling Improvement in Creativity	(--) Factors Signaling Deterioration in Creativity
Slack Reduction Strategy	Attribute/ Key Factor affected					
Human	Intrinsic Motivation	Low	Low	Medium	Challenge in the activity. More possibilities of success in the Flexible organization.	Less passion for the science. Low success. Less affection towards the organization. Missing Leadership
	Morale	Low	Low	Medium	No loyalty.	Weak Leadership/ Missing a vision Members leaving the organization
	Trust	Low	Low	Medium	Involvement and participation in the changes.	Lack of communication/Unjustified decisions.
	Conflict	High	High	Medium		A competitive culture Job competition as part of the plan
	Freedom/ Autonomy in the activity	High	High	Low	Having a leader	Too much freedom Autonomy without clear objectives, leader support
	Team Spirit	Low	Low	Medium	Sharing a common goal	High competition between team members. Absence of a leader. Fragmentation of the activity. Key people leaving the organization.
	Work redesign	Low	Low	High	Challenge in the activity.	Continuous changes in the activity make difficult to become an expert The nature of the activity becomes more divided, task oriented.
	Interactions/ Informal networks	Low	Low	Low	Working in projects inside and outside the organization.	Less informal interactions between teams. Low turnover and recruitment. Less trust. Fragmentation of the activity. Culture
Time & Space for creativity	Time Pressure	Low	Low	Medium	Moderate workload.	No deadlines, absence of time pressure to deliver. Lack of control/Spirit is not available for thinking.
	Space for creative activities	Low	Low	Medium		Lack of physical spaces to exchange.
	Physical Proximity	Medium	High	High		Open spaces in which is difficult to concentrate Dilution of space Conflict between teams Space with partitions Fear of disruption
	Satisfaction with office layout	Medium	Low	Low	Social spaces for informal interaction	
Financial	Level of Screening and evaluation	Low	Low	Medium	Instances of management and control	Lack of control No questioning of processes
	Tightening belts/ Cost Reduction	Low	Low	Low		Absence of financial constraints
	Risk Taking	Low	Low	Low		Distrust and mistrust culture Fear of failure Less motivation to experiment Less time to trial and errors
	Budget for R&D activities	High	Medium	Low	Realization of the costs and benefits of "nice to have activities" Finding sponsors for research. Cost-free partnerships with academia.	Do less costly experiments
Work Environment	Degradation of work environment	High	High	Medium	Open communication, transparence and participation	Competitive culture, no trust in management, absence of leaders, conflict between the teams, continuous changes, spaces that don't foster interaction

Table 5. Compared effects MusicLab vs DrugLab

		Phase 1		Phase 2		Phase 3	
The effects of slack reduction on creativity over time	Sequence	Downsizing Music: Lab	Downsizing Drug Lab	**360° Touring** & **Digital Focus Music: Lab**	lioi- Downsizing Drug Lab	**Digital** & 360° Strategy Blossoms fusic:Lab	Change to Flexible Performance Units & **Realization** Drug Lab
Slack Reduction Strategy	Dimension affected						
Human	Intrinsic Motivation	!editun	Low	High	Low	!editun	!editun
	Morale	!editnn	Low	High	Low	High	!editnn
	Trust	High	Low	High	Low	High	!editnn
	Conflict	Low	High	Low	High	Low	!editun
	Freedom/ Autonomy	High	High	High	High	!editun	Low
	Team Spirit	High	Low	High	Low	High	!editnn
	Work Redesign	!editun	Low	!editun	Low	!editun	High
	Interactions/ Informal Networks	!editun	Low	High	Low	High	Low
Time & **Space for creativity**	Time pre>sure	!editnn	Low	High	Low	High	!editnn
	Space for creativity	!edimn	Low	!eclitun	Low	Low	!edimn
	Physical Proximity	!editun	!editun	!editun	High	!editun	High
	Satisfaction with office layout	High	!editun	High	Low	High	Low
Financial	Level of Screening and evaluation	!editun	Low	High	Low	High	!editun
	Tightening belts/ Cost Reduction	High	Low	High	Low	High	Low
	Risk Taking	!editnn	Low	Low	Low	Low	Low
	Budget for R&D activities	!editnn	High	Low	!editnn	Low	Low
Work Environment	Degradation of work environment	Low	High	Low	High	!editun	!editun

Description of the findings

The full description of the longitudinal effects of downsizing at MusicLab and DrugLab are described in the annexes. The following tables illustrate with verbatims the processes and the process and the effects of downsizing, trough slack reduction (Human, financial, time & space) on creativity over time.

Phase 1 Dow:asizi.Dg	«As soon as we knew about it we gathered everyone, we ta!lked a lot with the teams, we explained things, it was pretty clear. We communicated not only about what happened but also the about the consequences of the fact that there would be more work, it would be harder, but it would allow perhaps to learn more things too, to gain a better experience. Downsizing was a way to adapt to a changing market. If we do not do this, we risk losing time and it would be much more brutal two or three years later. So there were not too many choices". "Downsizing takes a lot of discipline, management, discussion groups, understanding, listening and leadership.To bring teams from place A to place B, you need to explain why we're doing this change, what is the advantage to support it, what is the urgency to adapt, So this is both of persuasion and coercivenes.From time to time, we need to get people to rethink the way they work. It is also coaching because we're all aware that today we ask a lot of involvement and work with smaller teams and little career evolution paths"
Phase 2 360" Tourillc & Digitalroeu.s	"It wasn't easy but we had confidence in the strategy, we understood that this was needed to smvive, to grow, so good for us. At that time, the digital market was growing. It was not just cut, it was also transforming".
	"We have become creative to find "cost-free ideas". We have six times less money, so we take fewer risks. Conversely, when you do not have money, you have to be creative to find free ideas. For example, you must use the social networks that are usually free to find ideas for viral marketing, find a way to create a buzz on your artist online. When we do video clips, we ask artist to drive a car of a particular brand. We ask that brand to support the campaign financially" We have to be creative to find sponsors".
	"Between 2005 and 2007 Music Lab had tail wind, the company reconnected with success. It had been years since this was not the case. The president did a lot of brilliant things. He bought the best touring company in France.He was the first of the group to do such a thing. All these changes were good".
	"They were very good years (2004-2008). For four-five years, there was this kind of renewed motivation because things worked. We realized that having smaller teams did not necessarily impacted the results. We had very good results, projects took off, we had a lot of success in promotion, marketing and sales. We were all like free electrons with this lively passion to succeed. We communicated a lot via text message, e-mail because we were all on the field There was this sort of desire to succeed, to share successes, to bring each his stone to the edifice. Everyone felt he needed each other to succeed."

Phase3 Digital& 360" **Stntegy Blossoms**	"This is the main problem in this company today. Teams are asked to be motivated, to be on top of their creativity but we have nothing to offer them in terms of futute perspective. So we have one foot on the accelerator and one foot on the clutch. This is why people leave. The brand manager of one of our best French artists, a great guy, left because he had no potential career paths. Here, we don't even try to make him a career; I've always been in companies in which positions were created to make evolve a person who was a little pending"
	"Whenever I do something, I always ask my boss. If there is an idea, a process, an innovation that comes out of the box, I asked my boss. The same happens at his level, he needs to validate with his n +1. Before, there was a relative autonomy".
	"We come to some inconsistencies where the manager makes its operational work during the day and at night he perfmms his manager work. This is a situation that has become complex. This internal workload situation cannot be defined as modus operandi. It is not possible, it is not human. We cannot work like this for three or four more years".
	"The balance with my family life is not always terrible. I have to explain to my wife that I will be working at the studio until II pm and then I will be in a concert till2am. For someone who works only 35 hours, it is sometimes difficult to understand. For my children is the **satne".**
	The only thing is that in terms of workload, I have not enough time to give myself creativity windows. Today, we still have a lot of operational things to manage. Maybe when we got this new responsibility of being brand manager, we should have had fewer artists. We kept the same number of artists and suddenly it has become a lot of work. I think this is at the expense of the time we can have for stepping back to think and to create".
	"After the holiday, I'm going to install a room that will be a kind of library in which there will be no computers and phones, where people can be quiet and think".
	"We are aniving to a limit. A permanent lack of financial resources to invest in R&D is affecting creativity strongly. In our business, the ultimate creativity is to have a crush in artists and take a bet just on the basis of a personal idea. This is something that could be done before because we were able to afford it. Today, this is no longer the case". Also, some people would like to continue to work \vith us, but the financial perspectives and the financial means we have are not as interesting as they could be 10 years ago. We tell our bosses in the United States that we have now reached a limit that shouldn't be exceeded. This is where we reach the limit between downsizing and creativity. Creativity comes through our artists but also by our people here:"
	"I think it's a shame because taking tisks is part of our business and the consequences of less risk taking should be measured. It breaks the dynamics of creativity. From the moment you have an idea; you say it will never happen, so the idea is horded or not necessarily expressed. This is really bad since ideas are the crux of the matter, the heart of our business".

Phase 1 Downsizing	DrugLab
	"It's very violent. Because ultimately they are forced to do this. In social terms, it is all hypocrisy. First, it is called (PSE*). Just the vith the word, you feel attacked. They pretend to offer jobs to everyone when in reality they have already chosen the people they want to keep. Every1hing is a comedy selection. and everyone knows it. At the same time they are required, they must do so legally. This is an ongoing comedy that lasts three months. This is unbearable". • **Plans de Sawegarde de t'emptoi= French Emptoytnent Protection Scheme**
	"With the redundancy plan knowledge was lost. I worked \vith people who are no longer here so it was necessary to rebuild teams. The level of motivation to work on things is less since there are only 1 or 2 people (when before we were 5 or 6) to work on projects. We lost four of our colleagues, so there is a loss of knowledge, loss of time. At the end all that ends up being a demotivating factor for creativity. This is difficuh because when you see that the experts leave a project, you think that perhaps the battle is already lost. Then, to rebuild trust in management is hard".
	"During downsizing there is less freedom in the brain for creativity. We think more about other things that designing molecules or being more efficient. This is a time when it gets noisy and the mind is interfered \vith the things happening around".
Phase 2 Mini- Downsizing	"In chemistry, we did not agree \vith the decision to downgrade our team leader because we believed that the after the downsizing plan in 2009, he had perfectly managed the transition, he was able to motivate people, to provide a team dynamic. It was a total injustice to downgrade him to a researcher role and he could accept it. It is difficuh for someone who has managed a team of 20 people to be all alone \vithout management, \vith just one project. It was obvious that he could not accept that. Same in biology. So, the two are gone. Typically this is the kind of management error that is totally counterproductive because it took us a year to recover. For some the anger is still here".
	"For years, in my team, nobody followed what we did exactly. It was necessary that the programs had their tests but there was nobody to control. Finally, we rely on ourselves, we self-managed. The person responsible for biology was not a strong manager. His style was a bit too soft, too soft. When he left, the center's director became head of biology but he didn't have the time to manage. It's been three years since the department of Biology is in completely self-management. Every1hing relies on the kindness and \vill of individuals."
Phase 3 Change to Flexible Perfonaance Units & **Realization**	"When I read a publication, I can suddenly have an idea. However, the link between the article, the data I have and the paper I read 15 days ago \vill be done later, at a time when there is nothing that disturbs. Here working conditions are great if you know what you want to do but for strategic, intellectual work, the creative side, the open space is a problem".
	"It is always interesting when we give to the teams this possibility to work on the changes; it unites teams. There is more investment when you know you can propose something and at the end the option chosen is the one everyone shares and adheres. Our new mission is interesting"
	·'Me and my neighbor are as close as you and I, 30 em from each other. And you can spend a morning \vithout seeing because between us there is a small partition".
	rn terms of budgewhen we really need something and we manage to convince the management that it is important for the project we get it"."We still can create; we do not really have financial barriers. There is always a way to finance research".

DISCUSSION

The effects of downsizing on creativity are related to the type of slack reduction strategy implemented and the frequency of the reductions in slack over time. Specially, the effects are modified by the manner in which downsizings are implemented.Over time, frequent downsizing events are deleterious for creativity. Also, we found that the different categories of slack are linked.

HUMAN SLACK REDUCTION

Reducing human slack triggers the minds and behaviors of both the creative and R&D teams, but there is no direct effect on their creativity. Instead, manager approaches to implement downsizing influence team reactions and adaptation over time. Altogether, illegitimate decisions, communication failure and lack of management support during slack reduction are the causes of negative reactions (low levels of trust, morale and high conflict), leading to the deterioration of what is essential for creativity: a team's emotional stability and its work environment. Supporting Amabile and Conti (1999) who found that downsizing was accompanied by negative changes in the work environment, which in turn contributed to reduced creativity. A reduction in team size focusing mainly on workforce reduction without task redesign is a factor leading to lower levels of intrinsic motivation. Especially, eliminating a central member (i.e., the team leader) appears to be a key factor negatively impacting intrinsic motivation, team spirit and the level of interactions. In contrast, keeping a leader offsets the disruptions caused by reductions of human slack. In fact, both R&D and creative teams recurrently express their need for a leader, either because he was absent or in contrast, because he was a key element in providing a clear vision, linking the past and the present, and giving confidence. Not only the role but the behaviors of the leader are highly relevant to creativity and the capability of teams to adapt over time. This result is interesting and appears to be particular to R&D and creative contexts.

Culture also showed to be either a protective armor or an amplifier of the negative effects of downsizing. In the case of MusicLab a family, young, informal and result driven culture protected the organization. On the contrary, the hierarchical, elitist and excessively challenging culture of DrugLab made it more vulnerable to the negative effects.

TIME SLACK REDUCTION

Downsizing breaks the temporal patterns of teams and organizations over time in both symbolic and explicit ways. Symbolically, in the short term, downsizing provokes a break, a pause in the timeline on an individual's story so he can question about his past, present and future identity. At DrugLab, implementing downsizing appeared to "breach the peace of time" in the day to day operations of R&D teams and their "availability of spirit". Explicitly, both high and low levels of experienced time pressure restrict creativity. Results show that at least in the shorter term, the implementation of an urgent sense of time and the assignment of multiple commitments can yield positive creative outcomes (MusicLab). Without deadlines or time constraints the creativity goes down the drain (DrugLab). Nevertheless, as the frequency of human slack reduction increases over time so does the role overload (DeRue et al., 2008; Maslach,2003), until downsizing level has reached a tipping point beyond in which surviving employees' ability to create has decreased.

Further, over time both R&D and creative professionals appeared to be expected to engage in an expanding variety of activities, tasks, and roles more or less at once, leading to "vertical loading", or ``multiplexing'' and "polychronicity" that is the doing of two or more things simultaneously (Bluedorn

et al., 1992; Hall, 1983). This observation raises two questions about time and creativity: The first is related to the time it takes to become an expert in a creative or scientific domain. The excessive focus in time to market and the short term is creating a focus on explicit knowledge rather than tacit knowledge, which is reducing the capacity of both MusicLab and DrugLab to be creative. The second question relates to the quality of the time allocated versus the time needed for creative activities. Thinking time has a tangible component but its quality is of equal importance. In fact, in our interviews creative and R&D workers expressed the need to have time for creative windows, to step back, to let the spirit to be available for creativity.

SPACE SLACK REDUCTION

At the space level, we found that R&D and creative workers display a high level of consensus in their preference for closed workspaces rather than open. At Music Lab, participants reported high satisfaction with the working space (configured in private offices) whilst at Drug Lab, the move to open spaces building (with partitions) was reported as a "fence for creativity". Paradoxically, being physically closer to other peers has decreased the level of interactions and informal exchanges. This finding is in line with other studies reporting that open plan offices lead to decreased communication compared with private offices (Hatch, 1990) and decreased work performance and motivation (Becker et al., 1983; Brennan et al., 2002; Marans and Spreckelmeyer, 1982; Oldham and Brass, 1979). We also found that not just the physical attributes of a space influence informal interactions: "proximity". In fact, we understood that descriptions of the physical environments mirrored the companies' culture and the human effects of downsizing. For instance at DrugLab the "feeling of partition", "division between floors" and "distance between teams" were related to the physical space and to the consequences of downsizing. R&D and creative professionals also criticized the lack of physical spaces for creativity both individual (silent rooms) and collective (creativity workshops, steering rooms).

REDUCTION OF FINANCIAL SLACK

In the short term reducing slack can turn from being restrictive into being enabling for creativity. However, keeping low levels of financial slack over time is detrimental since it reduces risk taking, which is essential for creativity. In the spirit of the proverb "necessity is the mother of invention" we found that in the short term resource constraints fueled the creativity of teams at MusicLab and DrugLab. To compensate for the absence of financial resources, teams created new ways to live and work with fewer resources. The organization focused on the essential, became more selective and concentrated in the development of fewer artists. At Drug Lab financial slack didn't decrease during phases one and two. However, since phase 3, the site is now responsible to find its own financial resources to operate. As a result, DrugLab has decreased the expenses in non -essential activities. It has also it started to sign "free-cost" partnerships with academia. Specially, it has realized of the "real costs" of doing research supporting our first result. This finding provides support to the idea that creative outcomes can be achieved with constrained financial resources (Baker and Nelson, 2005; Garud and Karnoe, 2003). Through the years, continuous reduction in operating cost, expenses and investments in R&D is starting to engage the capacity to take risk which is essential for creativity. Music Lab is signing fewer artists, experimenting less with offset marketing and promotion campaigns. This situation has leaded teams to idea hording since they know they won't be supported financially.

CONTRIBUTIONS

Throgh our research we identified and operationalize slack two new dimensions of slack:

- *Process slack* refers to the difference between perceived power and organizational control. Organizational control brings up procedures and rules, no tolerance for failure, little freedom to experiment. Perceived power is linked to relaxed control mechanisms in the innovation processes, relaxation in the search process, and freedom for new product experimentation.
- *Space Slack*: Such areas or moments of freedom enjoyed by the creative workers to carry their duties that can be assigned of not.

This study contributes from a theoretical and methodological standpoint to downsizing, slack and creativity theories. By demonstrating the longitudinal effects of reducing different types of slack in the specific context R&D and creative industries, this article provides added precision to the nature, timing, spacing of downsizing across time and the conditions that modify the effects of reducing slack on creativity.

We conclude that the effects of reducing financial slack on creativity have an inverted-U relationship. However, frequency of financial slack reduction over time has negative effects mainly because it reduces risk taking which is essential for creativity. We found that reducing human slack interplays with the levels of morale, trust, team's spirits and informal interactions in both R&D and creative teams. However, the effects are positive or negative related to manager approaches to implement downsizing. Especially, leader support and behavior appear as a key factor. In both cases the role of the leader appeared relevant to explain the effects and the capacity of teams to change and adapt over time. At the space level, we found that R&D and creative workers display a high level of consensus in their preference for workspaces that are closed rather than open. Paradoxically, being physically closer to other peers decreased the level of interactions, informal exchanges. At the time level, an urgent sense of time pressure and of multiple commitments can yield positive creative outcomes. However, we observed that what matters isn't the quantity but the quality of the time. Over time, one of the main effects of continuous downsizing is "having less thinking time and spaces" for creative windows, to step back, to let the spirit to be available for both individual and collective creativity.

From a managerial perspective the implications of the results of this study are insightful especially for leaders in R&D and creative industries. First, they need to be aware that frequency and magnitude of reducing slack matters in creativity. Second, they should know about their responsibly and key role in moderating the effects of reducing human slack. It is in hard times that they need to show their leadership ability to keep the creative passion of their teams and protect the work environment. Third, while decisions to reduce human and financial slack are often out of their hands, keeping the slack time and space of creative and R&D workers could be a cushion to offset the negative effects.

LIMITS

These findings should be interpreted with caution considering the study limitations. The first one is restricted to a small sample (two companies only). Also our sample was constituted by scientists and talent scouts in the music industry in one country (France). Additional research will be required to examine whether the proposed dimensions of slack hold in different creative settings and countries. Furthermore, the methodology could also be improved through multiple data collection, on-site observation to cross validate responses and increase the validity of our interpretations (Eisenhardt
1989; Yin 1994).

AVENUES FOR FUTURE RESEARCH

Finally, our findings highlight the importance for downsizing research to be carried out over time and measuring different slack dimensions. Although for this study the slack dimensions were separated we found that the effects of downsizing at the time, human, space slack dimensions are untwined and more work should be done to explain those links.With this study, we have been able to witness how creativity is affected over time by downsizing and we have also perceived its complexity. Researchers in the field of downsizing face the problem of accessing the field, downsizing is “touchy” and organizations are less open to disclose about it. Downsizing is a sensitive topic and interviewing downsizing survivors gives a subtle mix of feelings and emotions. Longitudinal research is difficult to carry out and is demanding to present process data in the regular academic format. More empirical research about presenting data still needs to be developed.

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ANNEXES

This section describes the effects of downsizing on creativity over time and the key factors signaling improving and deterioration at MusicLab and DrugLab. The discussion is carried over time by types of slack.

Reductions of Human Slack

At the human dimension, downsizing interplays with the levels of morale, trust, intrinsic motivation, team's spirits and informal networks. However, the effects on team's creativity over time are related to manager approaches to implement downsizing.

In phase 1, at Music Lab communication about the decision to downsize, strong support from leaders during the process, added to the fact that teams understood the legitimacy of the downsizing and the need redesign for survival allowed for low conflict, high trust and team spirit within the organization. At Music Lab one of the objectives of downsizing was also to have smaller teams with a commando during phases one two, team members reported to have the freedom to perform their job as long as they deliver results and remained within budget. Another key point is that the president provided a clear vision of the companies heading to the teams. As mentioned by an artistic director:*"It wasn't easy but we had confidence in the strategy, we understood that this was needed to survive, to grow, so good for us. At that time, the digital market was growing. It was not just cut, it was also transforming"*.

In contrast, in Drug Lab the information was kept secret and the implementation was perceived by the teams as a trap, a comedy, leading morale, trust and intrinsic motivation to their lowest levels. People perceived the process as violent, they felt betrayed and angry: A research in chemistry mentioned: "*It's very violent. Because ultimately they are forced to do this. In social terms, it is all hypocrisy. First, it is called PSE*[2] *. Just the with the word, you feel attacked. They pretend to offer jobs to everyone when in reality they have already chosen the people they want to keep. Everything is a comedy selection and everyone knows it. At the same time they are required, they must do so legally. This is an ongoing comedy that lasts three months. This is unbearable".*

Especially, conflict was high because people were fighting for jobs. Team spirit also suffered not only because of the conflicting tensions, but also from the sadness of people leaving the organization. Key people leaving the organization led to losing knowledge, as researcher of the biology department mentioned: "*With the redundancy plan knowledge was lost. I worked with people who are no longer here so it was necessary to rebuild teams. The level of motivation to work on things is less since there are only 1 or 2 people (when before we were 5 or 6) to work on projects. We lost four of our colleagues, so there is a loss of knowledge, loss of time. At the end all that ends up being a demotivating factor for creativity. This is difficult because when you see that the experts leave a project, you think that perhaps the battle is already lost. Then, to rebuild trust in management is hard".*

At Drug Lab in terms of processes so much freedom, autonomy, without clear objectives, leader support and a certain level of screening and evaluation appear to be detrimental for creativity in all the phases. Teams struggle because of absence of leadership and direction.

2 Plans de Sauvegarde de l'emploi= French Employment Protection Scheme

For years, in my team, nobody followed what we did exactly. It was necessary that the programs had their tests but there was nobody to control. Finally, we rely on ourselves, we self-managed. The person responsible for biology was not a strong manager. His style was a bit too soft, too soft. When he left, the center's director became head of biology but he didn't have the time to manage. It's been three years since the department of Biology is in completely self-management. Everything relies on the kindness and will of individuals."

In phase 2 at Music Lab, work redesign, strong support from leaders and a "bifurcation of success" kept teams passionate with their jobs and with high levels of intrinsic motivation. One year after downsizing took place the president signed the most famous French artists in France, the best seller of the last five years. The atmosphere was good because the president finally was able to bring success to Music Lab. The company have had massive loses and he managed to pick up market share. Teams were proud and happy to belong to Music Lab". As a talent scout of the international label reported:*"Between 2005 and 2007 Music Lab had tail wind, the company reconnected with success. It had been years since this was not the case. The president did a lot of brilliantthings. He bought the best touring company in France. He was the first of the group to do such a thing. All these changes were good".*

In phase two at Drug Lab, teams hadn't recovered from the previous phase. The fact that teams didn't recognize as legitimate and objective the dismissal of the team leaders broke the little trust link that existed between the management team and the scientists. Team spirit couldn't recover since the leaders who were trying to rebuild it left and the competition for jobs have divided the teams. A researcher of the chemistry express how unfair and wrong the dismissal of the team leaders was perceived:*"In chemistry, we did not agree with the decision to downgrade our team leader because we believed that the after the downsizing plan in 2009, he had perfectly managed the transition, he was able to motivate people, to provide a team dynamic. It was a total injustice to downgrade him to a researcher role and he could accept it. It is difficult for someone who has managed a team of 20 people to be all alone without management, with just one project. It was obvious that he could not accept that. Same in biology. So, the two are gone. Typically this is the kind of management error that is totally counterproductive because it took us a year to recover. For some the anger is still here".*

In phase 3, the crisis of the recorded music kept affecting the performance of Music Lab the company; the digital sales were increasing but there were not significant enough to compensate the fall of the physical. The morale, trust, interactions and informal networks remain high. However, intrinsic motivation starts to decrease. That is because teams are missing career evolution perspectives and key people are leaving the organization. As the Brand manager of the international label mentioned *"This is the main problem in this company today. Teams are asked to be motivated, to be on top of their creativity but we have nothing to offer them in terms of future perspective. So we have one foot on the accelerator and one foot on the clutch. This is why people leave. The brand manager of one of our best French artists, a great guy, left because he had no potential career paths. Here, we don't even try to make him a career; I've always been in companies in which positions were created to make evolve a person who was a little pending"* Also over time, the internal processes and decision making have become more centralized leaving less room for autonomy. As this brand manager of the local label mentions: "*Whenever I do something, I always ask my boss. If there is an idea, a process, an innovation that comes out of the box, I asked my boss. The same happens at his level, he needs to validate with his n +1. Before, there was a relative autonomy"*.

In phase 3, Drug Lab shows a moderate improvement of the human factors that are key for creativity. This improvement is due to the fact that the teams were "lucky" that there were layoffs involved. For them, it was a strong signal sent by the top management. Teams were informed and involved in the

decision of the new direction for the site. Brainstorming sessions took place, the first workshop was dedicated to "to get it off your chest" and teams were finally able to express the anger and feelings about the downsizing process. This allowed for trust and conflict to decrease. After, the teams move on and started to collectively work on the possible options for the DrugLab site. Also, exit of the old therapeutical axe is perceived seemed to provide a hope of future success increasing intrinsic motivation. As a researcher in Biology mentioned:*"It is always interesting when we give to the teams this possibility to work on the changes; it unites teams. There is more investment when you know you can propose something and at the end the option chosen is the one everyone shares and adheres. Our new mission is interesting".* Team members realized that team leaders expected them to be autonomous whilst they expected to be guided. Intrinsic motivation increased for chemist and DMPK teams since the requests from other sites were challenging, more complex. The Biology team, not having as many assignments was motivated by fear of losing their job. Team spirit improved because they all realize that the site survival depends on a collective effort. Interactions don't improve. On the contrary, fragmentations in the activity make them work less as research programs decreasing the chances for interaction.

Time & Spaces

At Drug Lab Time and spaces for creativity were very affected during phases one and two. Absence of pressure to deliver from leaders, deadlines, control and non availability of spirit for thinking, were identified as the main causes. As a researcher of DMPK argued:*"During downsizing there is less freedom in the brain for creativity. We think more about other things that designing molecules or being more efficient. This is a time when it gets noisy and the mind is interfered with the things happening around".*

In phase three one of the main implications of being a flexible performance unit is the time frames becoming shorter. For the teams this is a real challenge. Handling different projects related to different domains (cancer, inflammation, and cholesterol) obligates them to gain knowledge in little time. The move to a new building and the demolition of the old one in parallel of the first downsizing plan was another choc for the teams who had to do a double grief (losing colleagues and their old site). Especially, the move from private offices to open spaces with partitions, appear to affect the capacity to concentrate in creative work. As a research in biology commented, *"When I read a publication, I can suddenly have an idea. However, the link between the article, the data I have and the paper I read 15 days ago will be done later, at a time when there is nothing that disturbs. Here working conditions are great if you know what you want to do but for strategic, intellectual work, the creative side, the open space is a problem".*

The fact that the site was designed for more people and it is under occupied has created a feeling of emptiness and dilution of the space. Paradoxically, being physically closer has decreased the level of interactions as a researcher in chemistry mentions: "*Me and my neighbor are as close as you and I, 30 cm from each other. And you can spend a morning without seeing because between us there is a small partition".* In phase 3, initiatives are taken to create social spaces that foster social interaction (steering room, gym, baby foot) but the open space is still a problem.

At music lab one of the immediate negative effects of downsizing in phase 1 was having less people to do the job, workload increased so teams had less time for creative activities. However, the passion for the job and interest in the new activity kept people motivated to face the challenges. In terms of physical space, there were no changes and in general teams were and are still highly satisfied with their office layout. Over time, the workload has continued to increase becoming insurmountable. "*We come to some inconsistencies where the manager makes its operational work during the day and at night he performs his manager work. This is a situation that has become complex. This internal*

workload situation cannot be defined as modus operandi. It is not possible, it is not human. We cannot work like this for three or four more years".

Excessive workload is also affecting the family lives of creative teams *"The balance with my family life is not always terrible. I have to explain to my wife that I will be working at the studio until 11 pm and then I will be in a concert till 2am. For someone who works only 35 hours, it is sometimes difficult to understand. For my children is the same.*

The fact that some labels have closed, and activities have been transferred to other teams has dramatically increased the scope of the work of creative teams at Music Lab. The diversifications of the company, its digital focus and the entrance in touring activities have obligated teams to multitask. Additionally, no support staff has been re-hired since the downsizing in 2004 and processes have gotten more complex, leaving creative teams with little time and spaces for creativity. As the brand manager highlights:*"The only thing is that in terms of workload, I have not enough time to give myself creativity windows. Today, we still have a lot of operational things to manage. Maybe when we got this new responsibility of being brand manager, we should have had fewer artists. We kept the same number of artists and suddenly it has become a lot of work. I think this is at the expense of the time we can have for stepping back to think and to create"*

In phase three, lack of physical spaces to concentrate and to exchange starts becoming a concern. Continuous interruptions of peers, emails and blackberry appear to be the biggest distracters in the creative processes. As the international director mentions:*"After the holiday, I'm going to install a room that will be a kind of library in which there will be no computers and phones, where people can be quiet and think. A month ago, I did a seminar for managing e-mails to force them to reduce the number of e-mails. We send and receive between 500 and 600 e-mails per day. The e-mail was something that became extremely harmful practice".*

Financial

At Drug Lab financial slack didn't decrease during phases one and two. In phase 3, the move to flexible performance units implies that the site is now responsible to find its own financial sources to operate. As a result, DrugLab has decreased the expenses in non essential activities. It has also it started to sign "free-cost" partnerships with academia. Specially, it has realized of the "real costs" of doing research. Overall, the issue at Drug Lab is not financial as a researcher mentioned: *"In terms of budget, when we really need something and we manage to convince the management that it is important for the project we get it".* "*We still can create; we do not really have financial barriers. There is always a way to finance research".*

Exacerbated by downsizing in phases one and two, the culture of challenge and increased conflict appear to be the cause of lack of risk taking during all the phases. The excessive challenge between the teams have made scientists (especially outside the biology department) to have fear of failure.

In the case of Music Lab, the company has drastically reduced over time operating cost, expenses and investments in R&D. To compensate for the absence of financial resources, in phases one and two teams created new ways to live and work with less resources. As a brand manager mentioned: *"We have become creative to find "cost-free ideas". We have six times less money, so we take fewer risks. Conversely, when you do not have money, you have to be creative to find free ideas. For example, you must use the social networks that are usually free to find ideas for viral marketing, find a way to create a buzz on your artist online. When we do video clips, we ask artist to drive a car of a particular brand. We ask that brand to support the campaign financially" We have to be creative to find sponsors".* Over time, it would appear that excess of resource constrains can be no longer

compensated by the teams creativity. The stock of "free-ideas" is starting to empty and Music Lab is at the edge as the vice president mentioned: "*We are arriving to a limit. A permanent lack of financial resources to invest in R&D is affecting creativity strongly. In our business, the ultimate creativity is to have a crush in artists and take a bet just on the basis of a personal idea. This is something that could be done before because we were able to afford it. Today, this is no longer the case". Also, some people would like to continue to work with us, but the financial perspectives and the financial means we have are not as interesting as they could be 10 years ago. We tell our bosses in the United States that we have now reached a limit that shouldn't be exceeded. This is where we reach the limit between downsizing and creativity. Creativity comes through our artists but also by our people here"*

Risk taking is perhaps one of the factors that had worsened over time. The frugal orientation and extreme focus on the essential is starting to engage the capacity to take risk which in this business is creativity. Music Lab is signing fewer artists, experimenting less with offset marketing and promotion campaigns. This situation has leaded teams to idea hording since they know they won't be supported financially. The manager of the 360° regrets this situation:*"I think it's a shame because taking risks is part of our business and the consequences of less risk taking should be measured. It breaks the dynamics of creativity. From the moment you have an idea; you say it will never happen, so the idea is horded or not necessarily expressed. This is really bad since ideas are the crux of the matter, the heart of our business. (Manager 360°)*