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■ Unplugged

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Where can we go from here?

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Corporate Entrepreneurship: where are we? Where can we go from here?

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INTRODUCTION

This Unplugged issue of M@n@gement is dedicated to the topic of Corporate Entrepreneurship and is titled: Corporate Entrepreneurship: where are we? Where can we go from here? An international workshop was organized in Lyon on June 20-21st, 2011 and brought together about fifty researchers. The aim of this workshop was to discuss the results of recent works in Corporate Entrepreneurship research. To this end, we asked four researchers to do a state of the field and to share their vision of the rising promising research questions. The philosophy of this workshop was very much in line with that of the Unplugged series. We wanted it to be, to quote Josserand (Clegg & Starbuck, 2009), “a wild card to share their own perspective on novel ways in which to conceive of management today”. In the field of corporate entrepreneurship research, we are currently witnessing lively scientific debate around the Entrepreneurial Orientation (EO) construct and the interactions between strategy and entrepreneurship. During the workshop, we embraced the distinction between advances in science (that we make by asking good questions) and scientific discovery (that we make by questioning what we think we know). This Unplugged includes three parts:

In part one, we present “The Evolution and Contributions of Corporate Entrepreneurship Research”, a state of the field of knowledge in the field. We retrace the field’s first steps and offer an agenda for research. At the intersection of strategic management and entrepreneurship lies the study of corporate entrepreneurship (CE), a phrase coined by Peterson and Berger (Peterson & Berger, 1971). CE is important for the field of general management (and thus the readers of M@n@gement) because it addresses entrepreneurship at the level of the firm (Miller, 1983), depending upon, yet going beyond, the entrepreneurial behaviors of the individuals that compose it. CE has been studied through its consequences (Guth & Ginsberg, 1990), through the prism of individual behaviors (Burgelman, 1983) and by investigating how companies organize for these activities (Kanter, 1985). The impact of national culture, meanwhile, has been studied relatively little (Hayton, George, & Zahra, 2002). Instead, the field has convened around other concepts applied to a corporate, organizational setting, such as opportunity recognition (O’Connor & Rice, 2001). Zahra et al note that the field is taking distance from the strategy literature, where CE has become overshadowed by the concept of entrepreneurial orientation, a strategic orientation akin to Market Orientation (Gotteland, Haon, & Jolibert, 2009), to embrace other questions. Our suggested research agenda first identifies the many classifications of CE that have been proposed. We note that the factors that lead to this variety have yet to be identified. Further research can fruitfully examine, amongst other topics: knowledge creation and integration, contextual factors such as national culture, markets (emerging or mature) and social entrepreneurship as well as inter-organizational manifestations of CE. The micro-foundations of these phenomena bring with them rather interesting questions: which individual behaviors lead to these organizational behaviors? How are they intertwined? How can HRM practices induce such behaviors? The keys to answering these issues, which can hopefully be offered by context, have yet to be discovered.

In part two of this Unplugged, we present an essay by Hayton, Hornsby and Goodblood entitled "The Contribution of HRM to Corporate Entrepreneurship: a review and agenda for future research". This piece examines the micro-foundations of CE. The authors begin with the idea that from the perspective of HRM, there are two facets to the entrepreneurial process: the first is geared towards knowledge identification, acquisition and generation; the second aims at knowledge assimilation, evaluation and integration. They identify the first with Burgelman's (1983) "autonomous strategic behaviors" and the latter with "induced strategic behaviors", a concept analogous to that of "ambidexterity" (Schmitt, Probst, & Tushman, 2010). Hayton et al draw upon "the behavioral view", resource and capabilities based perspectives and social exchange theory to piece together the relationship of CE to HRM. Borrowing from these theoretical lenses, they develop a process-model where environmental antecedents (leadership support, culture and structure) lead to and are supported by HR systems (knowledge management, compensation and incentives, policies and design) to favor the creation of human and social capital, which in turn can induce entrepreneurial behavior at the firm level (innovation, proactiveness and risk-taking). This in turn can produce CE outcomes (innovation, venturing or renewal) through the mediating effects of absorptive capacity and ambidexterity.

Finally, the third part of this Unplugged has two points of focus: the first is the relationship between entrepreneurial orientation and performance; the second is the role of corporate entrepreneurship in family businesses.

For nearly two decades, entrepreneurial orientation has held the center of the stage in CE research, in particular the stream of research that focuses on the relationship between EO and performance. In this issue, Rainer Harms presents his research note, "From Entrepreneurial Orientation to Performance: inside the black box of corporate entrepreneurship". In Lumpkin and Dess's 1996 conceptualization (Lumpkin & Dess, 1996), the integration of activities (for example by using structural integration devices, rules, planning and budgeting, or integrating roles for project activity) was identified as a potential mediator in the relationship between EO and the performance of a firm. The unique contribution of Harm's piece is, first, to identify the methodological barriers to this type of research. Second, he suggests more complex mediators. He shifts the focus from individual factors (for example, firm structure, commitment and organizational learning) to more complex ones: the entrepreneurial process (a chain of mediators) and "configurational embeddedness" (which brings us back to the initial intention of Miller's 1983 work).

Out of the numerous different possible contexts, we chose to focus on family businesses. In their piece, "Corporate Entrepreneurship in Family Businesses: past, present, and future research", Salvatore Sciascia and Cristina Bettinelli note that the dichotomy of early CE research (CE being favored in family firms against CE being impeded in family firms) has been overcome. Indeed, recent research includes more complex models, where positive and negative effects are studied simultaneously. In their suggested research agenda, the authors include questions that cover outcomes of CE (for example, strategic renewal, internationalization and strategic entrepreneurship) which have not been investigated in family business literature, as well as non-linear relationships and configurational approaches. Sciascia and Bettinelli go on to ask more provocative questions: how can entrepreneurial behaviors be transmitted from

one generation to the next? Could succession be a tool to develop CE in family firms? If we have at heart to study how the family affects CE, we could equally question how CE affects the family. This research note delivers a much needed study of the literature and the topic as a whole, because CE is one of the keys to firm survival and success, and family businesses are both a major form of business worldwide and are characterized by unique features. With these two essays and two research notes, we tackle important research issues in the field of CE and set agendas for future research.

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Part I: The Evolution and Contributions of Corporate Entrepreneurship Research

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INTRODUCTION

Bernard Haisch proposes that “Advances [in science] are made by answering questions. Discoveries are made by questioning answers”¹. This observation aptly relates to research on corporate entrepreneurship (CE), a body of literature that has flourished over the past three decades and has attracted a global audience. Researchers have explored the role of CE in organizational innovation, strategic renewal and rejuvenation (Guth & Ginsberg, 1990). This research has redefined organizational domains and identity, as well as developing new skills and capabilities that promote organizational evolution, rather than merely facilitating rapid adaptation to a changing environment. Connecting the fields of strategy, organizational theory and entrepreneurship, CE researchers have also explored the issues associated with companies’ exploration and exploitation activities as well as with opportunity discovery and creation (Zahra, 2008). CE research has been fundamental in revising the traditional boundaries and definitions of the field of entrepreneurship itself (Zahra & Dess, 2001).

1.<http://www.thegodtheory.com/>

OBJECTIVE AND FOCUS

In this paper, we take a close look at the progress CE research has made. In the spirit of Haisch’s observation, we review the progression of issues that CE researchers have tackled, the methods they have used and the accumulated findings of prior research. We also reflect on the nature of inquiry in CE research to determine whether we are asking the correct questions, correct in the sense that they will advance our collective learning and intelligence. Equally importantly, we sketch an impression of how CE research might look in a few years. As we are interested in understanding points of transition in the history of CE research, we need to go back to basics in order to better understand the territory that has been covered in this growing body of empirically-grounded research.

By necessity, our survey of the evolution of CE research does not constitute a historical account of every development that has occurred over the past 50 years. We also recognize that others might reconstruct the field and its milestones in very different ways. Furthermore, our suggestions for future research do not constitute the only paths the field should take; they are suggestions grounded in our experiences and in our preferences. Scholarly fields are not defined by the judgments and preferences of a few researchers. What we hope, however, is that our discussion here encourages and prompts others to ask, “Where are we?”, “Where are we going?” and “What is the best way to get there?” If we succeed in doing this, then we have achieved our aim for this article.

THE WAY WE WERE: FOUNDATIONAL RESEARCH (1970-1990)

Spurred by serious concerns in the US and elsewhere over the ability of maturing large, expanding corporations to adapt to changing and volatile technological, social and competitive forces, researchers have found a shared interest in CE. Early CE research was phenomenon-driven, focusing on defining the territory and distinctiveness of the entrepreneurial activities that occur in established companies in comparison to those undertaken by individual (independent) entrepreneurs.

For years, researchers have restricted the notion of entrepreneurship to that of individuals creating and growing their own companies. This focus changed with the essay by Peterson and Berger (Peterson & Berger, 1971), "Entrepreneurship in Organizations: Evidence from the Popular Music Industry". The two authors sought to identify the conditions in which entrepreneurship emerges and the organizational strategies adopted to contain its disruptive organizational effects. Employing Schumpeter's (Schumpeter, 1934) definition of the term "entrepreneurship" as a novel recombination of preexisting elements, Peterson and Berger observed that, "entrepreneurship is a process variable which may be seen in the leadership roles of widely divergent historical and organizational contexts" (p. 103). One of Peterson and Berger's seminal contributions was to link individual initiatives with organizational-level entrepreneurial activities. This important link served as a key foundation in the early study of CE but has been overlooked in the field's recent focus on generating generalizable empirical findings. Fortunately, the intimate link between individual and firm-level CE activities has been rediscovered in the past few years by researchers seeking to unravel and investigate the micro-foundations of CE.

Despite the importance of Peterson and Berger's work, it was the publication of Danny Miller's (Miller, 1983) study, "The Correlates of Entrepreneurship in Three Types of Firms" that stimulated and spurred broad interest in CE research. Miller was able to show that firms can behave entrepreneurially. Miller defined CE as having three related dimensions: innovation, risk-taking and proactiveness. The fact that Miller developed standardized measures to identify CE at the firm level further accelerated empirical research in this area. Interestingly, Miller's intention was not to define firm-level entrepreneurship *per se*, but to identify the means by which managers can promote firm-level entrepreneurial behavior through individual initiatives.

It is noteworthy that Covin and Slevin's (Covin & Slevin, 1989; Covin & Slevin, 1986) extension, refinement and validation of Miller's (1983) measures inspired a surge in empirical CE research. These validated measures, in turn, encouraged the use of mail surveys, which dominated early research into CE. Covin and Slevin's measures connected research into CE to another important body of research that seeks to clarify a firm's entrepreneurial orientation (EO). EO is defined as a firm's disposition to promote and pursue entrepreneurial opportunities, whether discovered or created². The widespread use of the Covin and Slevin scales, coupled with researchers' emphasis on EO, might have led some to believe that the two research streams (CE and EO) were one and the same.

Another key point of transition in the study of CE was the work of Burgelman

2. Researchers often confuse CE and EO, probably because they use the measures developed by Miller to define CE. We believe that this has confused prior findings. In this article we treat the two as distinct constructs. EO reflects a firm's disposition to become entrepreneurial in its operations. CE refers to the gamut of informal and formal activities the firm actually undertakes in identifying, evaluating and exploiting opportunities through internal (e.g., the creation of new venture units) and external (e.g., alliances) means.

(Burgelman, 1983a, 1983b, 1984), who studied internal corporate venturing. Burgelman's work identified and explicated two types of individual strategic behaviors. Induced strategic behaviors fit into the existing categories of organizations and also into familiar external environments. The structural context aims at keeping strategic behavior at operational levels in line with a firm's current concept of strategy. Induced strategic behaviors can lead to incremental innovations. Autonomous strategic behaviors fall outside of the organization's current concept of strategy. Burgelman (1983a: 1350) concluded that, "... autonomous strategic behavior is conceptually equivalent to entrepreneurial activity—generating new combinations of productive resources in the firm. It provides the basis for radical innovation from the perspective of the firm".

Managing the tensions that frequently occur between autonomous strategic behavior and structural context is accomplished through "strategic context". This is defined as the system of political mechanisms through which middle managers question current concepts of strategy and provide top management with the opportunity to retrospectively rationalize successful autonomous strategic behavior. Autonomous strategic behaviors correspond to the notion of "intrapreneurship" (Pinchot III, 1985). One of Burgelman's main contributions, therefore, is clarifying the individual behaviors intimately associated with CE. Burgelman used a process research approach that captures "the vicious circles, paradoxes, dilemmas, and creative tensions encountered by entrepreneurial activities in organizations" (Burgelman, 1983a: 1353). Burgelman's work also succeeds in conceptually integrating the literatures of "management/bureaucracy" (induced strategic behaviors) and "intrapreneurship" (autonomous strategic behaviors).

Gifford Pinchot III (1985) focused on the informal activities that give birth to CE. Pinchot coined the term "intrapreneurship" to describe individual intracorporate entrepreneurship. An "intrapreneur" acts entrepreneurially in response to organizational inertia, brought about by the size, bureaucracy or strategic near-sightedness of their firm. Pinchot believed that this inertia encourages employees and middle managers to work against the existing rules of the organization to bring about change and innovation. Pinchot's focus was on individual initiatives.

Rosabeth Moss Kanter and her team of Harvard researchers (R. Kanter, 1985; Kanter, North, Bernstein, & Williamson, 1990; R. M. Kanter, North, Richardson, Ingols, & Zolner, 1991; Kanter, Quinn, & North, 1992; Kanter & Richardson, 1991; Kanter, Richardson, North, & Morgan, 1991) adopted a methodology of multiple case studies and observed eight different companies that were engaged in strategic renewal. Her analyses showed how these firms were organized for CE activities through programs conceived to induce value creation through new ideas. Kanter identified four generic approaches that companies used to support and nurture CE: the "pure venture capital" model, where the parent company invests in external ventures; the new "venture development incubator", where new ventures are managed as independent entities, either internally or externally; the "idea creation and transfer center", which develops new activities and then passes them on for established operations to exploit, and the "employee project" model, which is an entrepreneurial variant of employee involvement programs. These activities focused on managing the tensions between the "mainstream" and the "newstream".

Ian MacMillan and his colleagues also studied corporate venturing activities, focusing on understanding the criteria for successful corporate venture capital initiatives. They (MacMillan, Block, & Narashima, 1986) found that success was more likely when a joint venture was privileged in terms of resources and its access to top management and when the experience from unsuccessful ventures was maintained in the organization and reused in other venturing projects. They also found that traditional planning tools were inefficient in venturing contexts. MacMillan and Day (MacMillan & Day, 1987) examined modes of entry into the market. The experience effect, in which companies learn by doing in undertaking corporate venturing activities, was noticed in the field of corporate venture capital (Siegal, Siegal, & MacMillan, 1988). However, this effect was not always linear. For instance, those corporate venture capital investors who remained close to the firm (in their management style, compensation and decision-making activities) were less successful than those who were more independent.

The research by MacMillan and his colleagues offered important insights into different aspects of corporate venturing activities. What is remarkable about this research is the close interactions that it involved between researchers, venture capitalists and managers. These interactions not only provided important sources of data but also gave theoretical grounding to findings that have since withstood the test of time. MacMillan and his colleagues were also attentive to the challenges that managers faced in developing, evaluating and institutionalizing corporate venture activities. This attention generated interesting actionable findings that are rare in the study of CE.

Guth and Ginsberg (1990) noted a lack of consensus among researchers on what CE is. Their extensive review of the literature led them to view CE as having two dimensions. The first involves corporate venturing/innovation activities that relate to new business developments within existing firms. The second is strategic renewal, which involves the creation of new wealth through new combinations of resources (for example, refocusing a business, majorly altering methods of marketing or distribution, redirecting product development or reshaping operations). This definition has guided some subsequent empirical research (Zahra, 1991, 1996b; Zahra & Garvis, 2000).

In Table 1, we give a recap of the key contributions to early CE research. As Table 1 makes clear, the focus was on making the case for entrepreneurship as an organizational-level phenomenon, defining CE and drawing its boundaries. Most contributions were conceptual or qualitative studies, with some attention to large-scale data analysis (Covin & Slevin, 1988; MacMillan, et al., 1986; MacMillan & Day, 1987; Miller, 1983). An important distinction that some researchers (e.g., Burgelman 1983; Pinchot III, 1985) made was between formal and informal CE, which result from different forces within established companies. These formal and informal CE activities sometimes complement each other. However, on other occasions, formal and informal CE initiatives compete with and stifle each other. This important insight has not been empirically studied in the literature.

Table 1. Main contributions of the early literature

Author(s)	Methodology	Focus	Contribution
Peterson & Berger	Qualitative	Organizational structure	Entrepreneurship should not be equated to individuals, firms can also make a novel use of means of production
Miller	Quantitative	Firm level entrepreneurial behavior	The means to achieve firm-level entrepreneurship (entrepreneurial processes) vary by context, here firm type.
Burgelman	Qualitative	Individual entrepreneurial behavior in an organizational setting	The firm is a source of opportunity for its members.
Pinchot	Conceptual	The individual vs the organization	Individual initiatives, even when sanctioned by management, sustain CE.
Kanter	Qualitative (Cases)	Corporate venturing activities	Four generic types of entrepreneurial vehicles; structure and management matter
MacMillan	Quantitative	Corporate venture capitalists	Experience effect, specific planning tools for CVCs are needed
Guth & Ginsberg	Conceptual	Definition of CE	CE aims at either corporate venturing/innovation or strategic renewal

CE RESEARCH IN THE 1990-2000 PERIOD

The pace of CE research accelerated significantly in the 1990s. Throughout this period, three key themes dominated CE research: examining the performance implications of CE, documenting the antecedents and effects of CE and examining the international aspects of CE. Research during this period also shifted to quantification, using large scale databases that were developed based primarily on surveys. This research was also dominated by variance studies that sought to explain differences in the outcomes of CE. Yet, this research lacked engaged scholarship, as it was done mostly without close interactions between researchers and managers.

CE research was also conducted around the globe, though for most of the 1990-2000 period US-based research continued to dominate. Larger US public companies were the key recipients of CE research attention and privileged in terms of empirical testing. Given the predominance of mail surveys, the interplay between individual and organizational variables received less and less attention, a factor that has handicapped our understanding of the micro foundations of CE research. In Table 2, we recap the key changes that occurred in the focus of CE research during the 1990s. Next, we reflect on the key themes that dominated CE research throughout that period.

Table 2. Key changes in the focus of CE research

	Research Focus
The 1980-1990s	The 1990-2000 Period
What is CE?	Antecedents of CE: a) External (country and industry effects And b) Internal (ownership; structure; culture; systems, etc) Stimulating CE (incentives and championing behavior; organizing for CE)
Dimensions of CE	Outcomes of CE: a) financial and b) non financial
How do CE and independent Entrepreneurship relate to one another?	International aspects of CE and their effect on performance. CE and entrepreneurial orientation (EO) Exploration and exploitation in CE: Opportunity

THE PERFORMANCE IMPLICATIONS OF CE

Researchers have given attention to the financial payoff from CE, especially profitability and growth (Zahra, 1991, 1993, 1996b). Harms' (in this issue) analysis of past research reveals that, on the whole, CE appears to have positive financial outcomes. However, these effects might vary under different conditions, such as the types of industries analyzed. Given that the factors that influence growth and profitability are different, it remains unclear when the pursuit of CE activities might have different implications for both variables (i.e., profitability and growth). In addition, because companies use different combinations of CE initiatives (Zahra, 1991, 1993), it would be beneficial to study how these different initiatives might influence profitability and growth. There is also the possibility that the effect of CE on performance is non-linear in nature (Zahra, 1991). Finally, some research (Zahra & Covin, 1995) has shown that there is lag between CE and financial performance. The duration of this lag might vary from one industry to the next and therefore deserves systematic empirical attention and documentation.

It is noteworthy that the bulk of the literature has focused on formal CE activities, overlooking the implications of informal CE initiatives. One study (Zahra, 1991) reported positive associations between these informal CE efforts and a company's financial performance. The contingent nature of these effects is yet to be examined. As with financial indicators of company performance, there is a need to determine the lag effects of CE on non-financial measures and determine if these relationships are non-linear.

Researchers have also probed the effect of CE on other organizational outcomes such as learning (Yang, Narayanan, & Zahra, 2009), the sharing and creation of knowledge (Dushnitsky & Shaver, 2009) and the upgrading and development of capabilities (Zahra, Nielsen, & Bogner, 1999). Most of these research efforts are conceptual and include little empirical validation. Researchers have used organizational learning (Yang, et al., 2009), capability (Sapienza, Autio, George, & Zahra, 2006; Yiu, ChungMing, & Bruton, 2007) and resource based (Barney, 1991) views to develop their arguments about the vital role of CE in effecting these outcomes and to link them to the development of competitive advantage and successful organizational performance.

ANTECEDENTS AND OUTCOMES

Researchers have also sought to understand the antecedents of CE, producing several studies that have focused on companies' external contexts. These studies have explored the effects of national cultures (Hayton, George, & Zahra, 2002) and industry (Zahra, 1991, 1993, 1996) conditions on CE. Some researchers have treated industry conditions as moderators of the effect of CE on company performance (Covin, Slevin, & Covin, 1990), helping to pinpoint some of the conditions under which CE might hinder or enhance company performance.

Researchers have also paid special attention to the internal (firm-specific) antecedents of CE. For example, they have focused on the organizational structure (Covin & Slevin, 1988; Zahra, 1991), organizational culture (Zahra, 1991), incentives (Zahra, 1991) and managerial systems (Zahra, 1991) of firms. They have also looked into the effect of firms' ownership on CE (Zahra, 1996a) and linked CE activities to firm strategy (Zahra, 1991). Much of this research has been guided by the proposition that firm-specific variables influence employees' perceptions, attitudes and behaviors, thereby determining potential investments in (and in pursuit of) CE. Taking risks has important career implications. Proactiveness demands employee empowerment and psychological ownership. Innovation requires managerial support when employees use their creativity and apply their knowledge to address existing and complex organizational issues.

Several trends in research into the antecedents of CE in the 1990s are noteworthy. Researchers examined sets of variables (for example, environmental characteristics) without considering their configuration. This practice ignored the relationships between these sets and their dimensions. Furthermore, the literature lacked studies that delineated and tested the causal chain among these variables. This is problematic as the causal chain may change over time or under particular conditions. In reviewing the literature, it became apparent that there are very few studies that employ longitudinal designs, a shortcoming that future studies should address. Finally, although CE research sought to provide creative solutions to issues related to corporate strategy (for example, "how to define the business?" or "how to create new revenue streams?"), researchers have not followed Burgelman's (1983) pioneering work to further refine the link between corporate strategy and CE activities. This research could be powerful in its documentation of the strategic issues associated with organizational renewal. It could also provide insights into the competitive strategies that companies use in different markets, the capabilities that they develop in order to pursue these strategies and how that mix of capabilities might change over time and under what conditions.

INTERNATIONALIZATION OF CE RESEARCH

An important development in CE research in the 1990s was the growing interest in international issues (such as strategies) and settings. The globalization of the world economy, the formidable challenges facing leading Western multinationals, and the growing recognition of "born global" companies prompted CE scholars to pay special attention to the global arena as a fruitful research context. It is interesting that researchers working on "international

entrepreneurship” have had to revise and broaden their definition of their field by adopting Miller’s (1983) conceptualization of CE.

Julian Birkinshaw (Birkinshaw, 1997) studied CE within multinational companies and their subsidiaries. His work mirrored the research conducted in the context of multi-business firms. It focused on the strategies, structures, systems, rewards and, importantly, interdepartmental relationships that could influence CE. His analyses documented the pivotal role of CE in creating new businesses. It also explained the relative power of different subsidiaries within a multinational’s portfolio and supported organizational evolution. One of the key insights of this impressive body of research is that the political economy of an organization (for example, its competition for resources) influences the extent to which different units engage in CE. Equally insightful is the finding that successful CE can influence power dynamics within a firm, thereby affecting commitment to and investment in future CE initiatives.

Zahra and Garvis (2000) made an empirical study that linked CE in international operations to companies’ overall performances. Arguing that these international operations exist in different business environments, Zahra and Garvis found that environmental characteristics significantly moderate the relationship between CE and company performance. Despite the strong interest in understanding the global challenges facing multinationals, empirical studies on international CE activities remain scarce. One of the reasons for this is the growth of research on international entrepreneurship as a separate area of scholarly inquiry, which has shifted attention away from international CE. Another is the complexity of the relationships associated with internationalization. CE activities appear to flourish in particular units but not others. Conceptual issues about the relationships between different international CE activities have also been difficult to disentangle, as noted by (Dess et al., 2003). Still, we believe these deficiencies in the literature offer important opportunities to examine variations in CE across countries and companies.

Overall, although researchers have recognized the importance of international CE, there has been limited empirical work attempting to delineate relevant and important research themes worthy of study. Research has also failed to systematically consider the differential effects of country and firm-specific variables in explaining CE in companies’ international operations. The means by which companies induce and capitalize on CE activities have also been overlooked. Researchers have also failed to recognize that many small and medium enterprises (SMEs) are active in international markets and these face unique challenges from multinational companies. Lastly, researchers have overlooked the unique issues associated with company origins, such as the differences caused by being from either an emerging or an advanced economy.

THE 2000-2012 PERIOD

Researchers have continued to study CE, following different paths. Some have studied the different activities that companies undertake to engage middle managers and promote their interest in CE (Hornsby, Kuratko, Shepherd, & Bott, 2009; Kuratko, Ireland, Covin, & Hornsby, 2005). Others have studied the effect of intellectual capital and HRM research policies on CE (Schmelter, Mauer, Börsch, & Brettel, 2010; Zhang & Jia, 2010). Still others have investigated the effects of CE on company performance in countries other than the US (Hajipour & Mas'oomi, 2012; Kemelgor, 2002; Li & Zahra, 2012). Surprisingly, most research conducted outside the US has consisted of replications and extensions of earlier studies published using data from US companies. This practice has served to homogenize findings, instead of uncovering the distinct forces at play in different national settings. This practice stands in stark contrast to the growing focus on contextualizing entrepreneurship research.

CORPORATE VENTURING

Researchers have paid greater attention to the corporate venturing dimension of CE. "Venturing" means entering new market arenas to revitalize or revise a company's portfolio. Researchers have classified different types of venturing activities and discussed the conditions under which each can add value. They have also linked corporate venturing to strategic renewal, the process by which senior executives transform the fundamental values that guide their companies' strategic moves.

Organizational renewal through venturing serves the dual goal of exploring opportunities in existing and new market arenas as well as stretching and leveraging organizational capabilities to exploit discovered or created opportunities. Venturing helps to fill gaps in a company's capability set, expedites its strategic moves, enhances its strategic repertoire and allows it to benefit from knowledge created by and obtained from external sources. As such, venturing can complement the internal capabilities and skills of a corporation, providing a foundation for growth and profitability.

A glaring omission in this body of research is ignoring the myriad of organizational issues with which senior managers and entrepreneurs struggle in pursuit of value creation. How should companies sequence their venturing efforts? How can they build synergy among these activities? How should managerial talent be developed in order to manage these diverse initiatives? How can senior managers induce coherence among these activities? What and under what conditions can organizations learn from their corporate venturing?

HOW DO ESTABLISHED COMPANIES RECOGNIZE OPPORTUNITIES?

A promising development is the growing appreciation of the differences that appear to exist between independent entrepreneurs and established companies in identifying opportunities. These two groups pursue opportunities that differ in their magnitude, focus, resource requirements, potential payback and strategic implications. In one of the various studies that have focused on corporate opportunity recognition, O'Connor and Rice (O'Connor & Rice, 2001)

investigated opportunity recognition in large firms. They found that, for radical innovation, the innovation had to be identified as an opportunity by different actors in the organization and through these occurrences, understanding of the opportunity was changed, ultimately by senior executives wishing to protect the innovation from the organization. To improve organizational capacity for opportunity recognition in firms with an R&D unit, O'Connor and Rice suggested that top management send signals that they are receptive to game-changing innovation, invest in organizational enablers for opportunity recognition, initiate a pilot group to sustain attention, promote and nurture informal networks and develop organizational structural mechanisms that support breakthrough innovations.

Opportunity recognition and identification is even more complicated in MNEs. The diversity of locations where subsidiaries operate can expose them to a rich array of lucrative opportunities that they can pursue individually or in collaboration with sister units. Interactions with customers, suppliers and key local stakeholders can also increase the number of potential opportunities. However, not all subsidiaries have a free hand in choosing the opportunities that they may wish to exploit. In some MNEs, these decisions are made by the headquarters and approved resource allocation follows. However, subsidiaries do enjoy considerable autonomy from their headquarters. Mahnke, Venzin, and Zahra, (Mahnke, Venzin, & Zahra, 2007) observe that the political economy of competition (between different strategic orientations and different risk preferences among managers) within these units can profoundly influence the search for and recognition of opportunities. Mahnke et al. (2007) further assert that knowledge fragmentation and information asymmetry create serious barriers to opportunity comprehension among key executives. Opportunities are like unborn children: until their birth, their identities and potential contributions are almost entirely unknown.

Some opportunities are discovered whereas others are created (Alvarez & Barney, 2007). This distinction has implications for future CE research. As Zahra (2008:243) shows, in CE, "discovery and creation sometimes form a virtuous and dynamic cycle where entrepreneurial opportunities that have been discovered at a point in time become a platform for the creation of a myriad of additional opportunities at a later time. In turn, this sparks further discovery of varied and more lucrative opportunities". This dynamic cycle requires empirical validation to determine where discovery inspires creation. Are there conditions under which this virtuous cycle (where discovery encourages creation) becomes a vicious cycle (where these activities stifle each other)?

WHERE CAN WE GO FROM HERE?

As our review suggests, considerable progress has been made in the study of CE. Yet, it is also evident that findings have been fragmented. The bulk of prior research lacks theoretical grounding. Attention to the temporal, spatial and political contexts of CE activities has also been limited, thereby generating generic findings of little value for managers or scholars. The limitations of past CE research presented in the previous sections can serve as important areas for future inquiry. Still, we will focus on several areas where we can conduct fruitful CE research.

LINKING CE TO STRATEGIC VARIETY

We believe a major transformation in CE research is likely to result if we focus on its role in inducing strategic variety, in the ability to develop new strategic moves by building on and harvesting the collective intelligence of organizational members through knowledge creation, absorption, sharing and utilization. When knowledge is combined with creativity and imagination, new types of skills are envisioned, developed and used to generate the variety necessary to compete successfully. When this occurs, we can observe the dynamic interplay that can occur between strategy and entrepreneurship. Entrepreneurship is the engine by which companies define opportunities, explore and create novelty and variety and give substance to their capabilities. Strategy focuses more on exploiting opportunities and creating value, sequencing competitive moves and defining key rivals. This dialogue between strategy and entrepreneurship keeps capabilities current and focused on pursuit of the company's mission. This leads to our next point.

INDUCING VARIETY THROUGH KNOWLEDGE

If CE centers on creating new businesses and inducing strategic variety, then the knowledge creation and exploitation processes associated with CE activities should be studied further. We need to study the kind of knowledge being created by CE. This knowledge becomes the foundation for building capabilities and inducing variety in organizations (Zahra & George, 2002). Capabilities go beyond technological skills and competencies. They include marketing, operational, managerial, cognitive and organizational capabilities. How these capabilities develop and change because of CE is an important area for future inquiry. To illustrate our point, consider the work of Newey and Zahra (2009), who examined how operating and dynamic capabilities interact through endogenously caused changes. They found that, at the operating capability level, firms ensure that new product development activities are absorptive. This learning has to be captured at the product portfolio planning level. When this learning is captured and transformed, product portfolio planning becomes a dynamic capability that reconfigures operating capabilities based on beliefs about follow-on entrepreneurial opportunities.

Capability development often requires the conversion of abstract knowledge into concrete applications. Zahra, Van de Velde and Larrañeta (Zahra, Van de Velde, & Larraneta, 2007) find that, in corporate and university spin-offs,

knowledge conversion capabilities differ greatly: corporate spin-offs emphasize more than university spin-offs their embodiment and integration capabilities, their configuration and design capabilities and their conceptualizing and visioning capability. These different capabilities help to translate knowledge into prototypes that allow the development of different business applications. Some of the knowledge used in these activities resides within companies but other types of knowledge are brought from external sources, requiring the firm to develop absorptive capacity to benefit from this imported knowledge (Zahra & George, 2002). Enriching strategic variety, therefore, requires exposure to a wide range of sources of external knowledge (Larraneta, Zahra, & Gonzalez, 2012). The open innovation movement and the global network of dispersion of knowledge and innovation can enrich the variety and the quality of knowledge a firm gains externally. This knowledge can spark internal innovation and fill gaps in a company's knowledge base.

Future CE research could help us address a number of fundamental questions. How do companies determine the types of knowledge needed to build strategic variety? Where does the knowledge come from? How do companies integrate internal and external knowledge? What is the role of knowledge integration in this regard? How do companies convert this knowledge into specific applications? Who is responsible for knowledge integration when the firm has multiple, ongoing CE initiatives? Which types of knowledge are likely to be gained from different venturing activities?

THE INTERNATIONAL DIMENSIONS OF CE

Research into the international dimensions of CE began in earnest in the late 1990s, as noted earlier. A key development that occurred in this research was the recognition that international expansion can be a form of CE (Zahra, 2003). Researchers have sought to draw heavily on literature from international business to study the scope and scale of companies' operations and discover how they might influence CE and, in turn, organizational performance. Empirical findings reveal a significant positive relationship between internationalization and company performance, but this relationship is mediated by companies' absorptive capacity (Zahra & Hayton, 2008). CE is important for the development of absorptive capacity, as noted earlier. The instances of learning and knowledge acquisition that occur because of (or within) CE can stretch firms' absorptive capacity, thereby allowing them to import and creatively use knowledge in conceiving new revenue streams.

Researchers have shown an interest in understanding the nature of entrepreneurial activities that occur as a result of companies' internationalization efforts. Most past research has examined well established, large, multinational corporations mostly from advancing economies that expanded into new markets in advanced or emerging economies. This focus has limited research attention on the role of SMEs as important players in the global economy (George, Wiklund, & Zahra, 2005). This gap persists in CE research, even in many of the studies that have been conducted using data from economies dominated by SMEs.

Another noteworthy development in CE research is its attention to emerging economies, the home of over 80 percent of the world's population. Companies from these economies have become adept and entrepreneurial in their pursuit

of markets in advanced or emerging markets. Companies from these emerging markets need to unlearn existing values and practices while learning new ones (Zahra, Abdelgawad, & Tsang, 2011). Unlearning rids these organizations of arcane and dysfunctional routines that could otherwise stifle their creativity and growth. Learning facilitates the building of new capabilities that make possible the profitable exploitation of entrepreneurial opportunities.

Clearly, researchers interested in international aspects of CE have important opportunities to conduct meaningful research and important question to try and answer. For example, how do emerging multinationals' internationalization objectives affect how and what they unlearn as they move to developed economies? What are the effects of different opportunity types on emerging multinationals' learning and unlearning processes as they build entrepreneurial capabilities? How do the attributes of emerging economies influence CE? Does this setting influence the rate and form of CE? How do changes in these characteristics influence CE? What does national culture play in this regard? Given that countries develop and support distinct systems of innovation, what is the role of these systems in shaping the types of CE activities? Answering these questions is likely to require a shift in research methods and design, where qualitative and process (rather than variance-type) studies play a key role.

CE AND SOCIAL ENTREPRENEURSHIP

Interest in social entrepreneurship and bottom of the pyramid strategy also offers rich opportunities for future research. Social entrepreneurs apply business models that focus on addressing important social issues while making a profit. Bottom of the pyramid strategies focus more on how well established companies can leverage their skills and capabilities in serving the poor. Some companies have focused on applying bottom of the pyramid strategies; others have focused more on the creation of social ventures. Both these alternatives offer opportunities for research to capture the range of possible social ventures, to better understand the various actions and processes which are followed to discover and exploit opportunities and to enrich our understanding of the motivations of social entrepreneurs. Zahra and colleagues (Zahra, Rawhouser, Bhawe, Neubaum, & Hayton, 2008) note that societies increasingly depend on social entrepreneurs, whether individual or corporate, to fulfill social needs left unaddressed by governments and NGOs. Zahra et al. highlight the forces leading to the globalization of social opportunities (global wealth disparity,

the Corporate Social Responsibility movement, market, institutional and state failure, and technological advances and shared responsibility) and define five attributes that define social opportunities (prevalence, relevance, urgency, accessibility and radicalness). Nonetheless, important questions remain: what heuristics do social entrepreneurs apply to expedite their ventures' internationalization decisions? Do social ventures, especially those created by large corporations that operate internationally, have to employ innovative organizational structures and business models? Do they need to employ cooperatives strategies and connect with different sources of funds around the globe? Why do some internationalize earlier than others? Understanding these issues can help us better appreciate the sources of heterogeneity in companies' CE activities and, as a result, their strategies.

CE AS A GAME CHANGER

More and more, the idea of competition as defined by physical or digital dimensions (time, space or resources) is being replaced by an idea defined by the opportunities, challenges, core competences, capabilities and constantly changing competitive arenas of firms. This encompasses the global networks and ecosystems in which firms operate. Zahra and Nambishan (Zahra & Nambisan, 2012) explore the dynamic interplay between entrepreneurship and strategic thinking in different types of business ecosystems and discuss how that interplay affects the ways companies compete. They identify four models of ecosystems (termed Orchestra, Creative Bazaar, Jam Central, and MOD Station) that differ in terms of the nature of the innovation spaces they inhabit and the nature of their governance of independent new ventures, corporate ventures and established companies. This raises several questions for future research. For instance: how can CE activities foster adaptations to and within these systems? How can CE activities foster moves that can change the system (to change the competitive arena, alter the rules of the game and redefine competitors)? Can CE and venturing activities be used creatively to redraw an industry's ecosystems and the relationships that might exist in them?

STUDYING THE MICRO FOUNDATIONS OF CE

Micro foundations refer to individual cognitions, attitudes, beliefs, motivations and behaviors that create and influence macro structures (for example, firms, organizations, markets and networks) and other social economic activities (Van de Ven, 2007). Micro-processes (Teece, 2007), which have been overlooked in entrepreneurship research (Santos & Eisenhardt, 2009), recognize that economic action arises from their situated cognitions, as expressions of their beliefs (Nonaka & von Krogh, 2009). Examining these variables could serve future CE research by highlighting the role of agency (Dew, Read, Sarasvathy, & Wiltbank, 2008) and reclaiming the centrality of the entrepreneur. Studying micro foundations also underscores the importance of studying the research setting. For example, why does the behavior of certain individuals influence group behavior? How can group behavior influence an organization?

CONCLUSION

Over the past 50 years, research on CE has flourished and become increasingly global in scale. This research has the potential to inform our theories on organizational adaptation and transformation. The lack of theory and the tendency to ignore the context of CE activities raises questions about the contributions that this research has made. Though selective in focus, our review serves to highlight areas requiring close examination for future studies. The review also draws attention to the many intermediate outcomes of CE such as learning, adaptation, capability building and the facilitating of organizational evolution. By paying closer attention to context and studying micro-foundational issues, more informative and relevant research could be carried out and shape theory building and testing on CE and its various dimensions.

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Part II: The Contribution of HRM to Corporate Entrepreneurship: a review and agenda for future research

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INTRODUCTION

Zahra, Kuratko, and Jennings (1999) noted that “some of the world’s best-known companies had to endure a painful transformation to become more entrepreneurial. They had to endure years of reorganization, downsizing, and restructuring. These changes altered the identity or culture of these firms, infusing a new innovative spirit throughout their operations...change, innovation, and entrepreneurship became highly regarded words”. Similarly, Dess, Lumpkin, and McGee (1999) noted that “virtually all organizations—new startups, major corporations, and alliances among global partners—are striving to exploit product-market opportunities through innovative and proactive behavior—the type of behavior that is called for by innovation and entrepreneurship”. This increased emphasis on innovation and entrepreneurial behavior within existing organizations involves a significant role for firms’ human resources and human resource management practices. The important question to be answered is: which human resource policies, practices and systems are likely to help initiate and sustain corporate entrepreneurship? The goal of this paper is to begin to answer this question by proposing a model of how critical elements of CE and HR fit together, discussing the important human resource management (HRM) elements necessary for initiating and sustaining corporate entrepreneurship behavior and by setting an agenda for important future research topics.

THE DUALITY OF HRM AND CE

Entrepreneurial organizations are those that are able to discover, evaluate and ultimately exploit opportunities at a greater rate than more conservative organizations (Miller, 1983; Shane & Venkataraman, 2000). Such organizations will tend to be proactive, risk-taking and innovative. Entrepreneurial organizations are better able to identify and leverage new technologies in the pursuit of value creation, often defining entirely new markets in the process (e.g., Lumpkin & Dess, 1996; Miller, 1983). Entrepreneurship is dependent upon being able to identify new opportunities and acquire and integrate new knowledge. Novel combinations of knowledge and capabilities in turn create new sources of value. This process rests upon the creation of informal networks within and across organizational boundaries (Bucic & Gudergan, 2004; Day, 1994; Kang, Morris & Snell, 2007).

The identification and acquisition of new ideas and new knowledge usually involves the autonomous contributions of middle managers (e.g., Burgelman, 1983; Floyd & Lane, 2000; Floyd & Wooldridge, 1999). Opportunity identification rests upon the willingness and ability of middle managers to create informal networks beyond the ones strictly needed for their ordinary working activity (Burgelman, 1983; Hornsby, Kuratko & Zahra 2002). By so doing, they contribute to the collection of innovative ideas from inside and outside the firm (Hornsby et al., 2002; Kelley, Peters & O’Connor, 2009). The identification of new opportunities implies freedom from existing beliefs concerning ‘the right way to do things’ or ‘what this organization does best’. These exploratory

behaviors are therefore highly autonomous and routine-agnostic (e.g., Floyd & Wooldridge 1999).

After discovering an opportunity, it is necessary to integrate that new knowledge into existing knowledge stocks, products, processes or strategies in order to exploit it (Ardichvili, Cardozo & ray, 2003; Burgelman & Sayles, 1986; Cohen & Levinthal, 1990; Shane & Venkataraman, 2000; Zahra & George, 2002). This process is likely to involve multiple individuals within the organization (Floyd & Wooldridge 1999; Hayton & Kelley, 2006; Kelley et al., 2009). After its discovery, an idea or opportunity must undergo a process of empirical validation by receiving the evaluation of a network of people that the entrepreneur creates in order to get his/her idea accepted (Floyd & Wooldridge, 1999; Zahra, Kuratko & Jennings, 1999). The idea may also need to be aligned with organizational goals and activities or alternatively, the organizational strategy may need to be adapted to the new opportunity (Burgelman, 1983; Guth & Ginsberg, 1990). Therefore, the integration of an entrepreneurial idea is a process that moves from an individual to an organizational level (Burgelman & Sayles, 1986; Floyd & Wooldridge 1999).

The involvement of others is necessary in order to acquire resources for developing and testing the potential for value creation of new knowledge (Ardichvili et al., 2003). An opportunity has to be proven viable even before obtaining resources for its preliminary development (Burgelman, 1983). In order to receive a positive evaluation and get access to resources, entrepreneurial ideas must be championed throughout the organization (Day, 1994; Floyd & Wooldridge, 1999; Howell & Higgins, 1990). Champions engage other organizational members in the technical definition and development of an entrepreneurial idea and seek legitimacy and sponsorship from the key resource holders and decision makers within the organization (Floyd & Wooldridge, 1999; Howell & Higgins, 1990). In this way, new knowledge is integrated into a firm's competences, renewing or extending them (Floyd & Wooldridge, 1999; Nahapiet & Ghoshal, 1998; Zahra, Nielsen & Bogner, 1999; Zahra & Nielsen, 2002).

Social interactions, as well as organizational routines, are particularly important for integrating knowledge that is more tacit in nature (Grant, 1996). Knowledge exchange requires an individual to have the opportunity to gain access to other parties, the motivation to exchange knowledge and the ability to combine knowledge (Nahapiet & Ghoshal, 1998). Therefore, managerial processes and systems, organizational structures, culture and values are all potentially influential upon the integration of new knowledge into products or services (Bucic & Gudergan, 2004; Hayton, 2005; Perrin & Rolland, 2007; Verona, 1999).

The integration of the new into existing knowledge stocks and capabilities is influenced by a concern for the implementation of an organization's strategic objectives (e.g., Cohen & Levinthal, 1990; Burgelman, 1983; 2000; Mom, van den Bosch, & Volberda, 2007; Zahra & George, 2002). The process of knowledge integration involves building consensus and invoking common goals (e.g., Burgelman, 1983; Burgelman & Sayles, 1986; Day, 1994; Perrin & Rolland, 2007; Zahra & Nielsen, 2002). Knowledge integration is an inherently social process involving interaction through internal organizational networks (Grant, 1996; Kang et al., 2007; Nahapiet & Ghoshal, 1998; Zahra & Nielsen,

2002). Thus, the behaviors associated with knowledge integration may be described as collaborative and supportive of organizational routines (e.g., Grant, 1996; Morris, Davis & Allen, 1994; Wagner, 1995).

This brief review suggests that there are two facets to the corporate entrepreneurial process from the perspective of HR. The first is oriented towards knowledge identification, acquisition or generation. The second, meanwhile, is oriented towards knowledge assimilation, evaluation and integration. The HR system must be influential upon the spontaneous, exploratory and autonomous strategic behaviors of employees (especially middle managers) and at the same time must support the induced strategic behaviors needed to maintain efficiency and discipline. According to Burgelman (1983), the organizational concept of strategy plays a pivotal role in both enabling and constraining behavior in organizations. The concept of strategy directly influences the day-to-day behaviors of employees in what Burgelman terms 'induced strategic behavior.' The strategic objectives of an organization shape its structure and processes and these create the conditions within which individuals and groups perform their work. Organizational leadership and culture play a very direct role in the establishment of a strategy and the subsequent creation of their organization's structural context. As has been shown by Baron, Hannan and Burton (1999), HR systems reflect the strategic choices and preferences of organizational founders and leaders. In turn, HR systems play a significant part in reinforcing and rewarding the behaviors required for the implementation of existing strategic objectives.

Burgelman's framework suggests that HRM practices are of significance to CE for two reasons. First, they may influence the extent to which employees engage in the behaviors needed to promote knowledge integration. Second, overly rigid HR policies may inhibit the autonomous strategic behaviors required to engage in opportunity identification and the acquisition of new knowledge and capabilities.

In addition to inducing strategic behaviors, the HR system plays a significant role in creating a context in which individuals are willing and able to perform the kinds of autonomous strategic behaviors that support CE. These behaviors include the formation and maintenance of social networks inside and especially outside of organizational boundaries (e.g., Kelley et al., 2009). They also involve the championing of novel ideas and the adoption of significant career risk in promoting and building support for ideas that have highly uncertain outcomes (e.g., Day, 1994). This autonomous entrepreneurial behavior occurs outside of the official processes of the organization but is critically linked to sustainable entrepreneurial outcomes.

THEORETICAL LENSES

There are three dominant theoretical perspectives in the literature that seek to explain how HRM may influence innovation and entrepreneurship: resources and capabilities based perspectives, the behavioral view, and social exchange theory derived explanations. These explanations are not mutually exclusive and each explains a part of the puzzle of the relationship between HRM and CE.

RESOURCES AND CAPABILITIES

The resource based view (RBV)(Barney, 1991) and the strategic capabilities perspective are dominant explanations for how HRM can influence organizational performance and have been widely discussed in strategic HRM literature (e.g., Becker & Huselid, 2006; Combs, Liu, Hall & Ketchen, 2006; Huselid, 1995; Wright, Dunford & Snell, 2001). The RBV explanation rests upon the role of HRM in building unique, difficult to imitate resources that create value. When this is achieved through HRM and organizational culture, organizations are able to leverage their human and social capital in the creation of unique tacit knowledge, building a base of intangible assets that are valued by stakeholders and create competitive advantages. One of the limitations of the RBV in this explanation is that it fails to provide sufficiently specific guidance on the creation of intangible assets.

The capabilities view extends the arguments of the RBV and seeks to provide greater specificity. According to this view, strategic and dynamic capabilities are created from combinations of organizational resources, processes and management practices (e.g., Teece, Shuen & Pisano, 1997) that facilitate the creation and integration of knowledge (e.g., Grant, 1996; Henderson & Cockburn, 1994; Kogut & Zander, 1992; Zahra & Nielsen, 2002). It is not only the created knowledge which represents the strategic resource. The resource also involves the capability for the continuous product, integration, and exploitation of that knowledge that sustains competitive advantage (e.g., Grant, 1996). Therefore, according to this view, the HR system must facilitate the acquisition (or creation), integration and exploitation of new knowledge. In so doing, the HR system itself becomes a strategic capability. Recent research has supported this perspective of the role of HRM in creating strategic, knowledge-based capabilities (e.g., Smith, Collins & Clark, 2003; Subramaniam & Youndt, 2005). Such studies examine the nature of these underlying capabilities and then connect specific HR practices with their creation. However, this connection relies upon two additional theoretical lenses: the behavioral view and social exchange theory.

THE BEHAVIORAL VIEW AND HR SYSTEMS

The basic argument of the behavioral view is one of the longest standing explanations of how HR systems influence organizational performance. HRM creates the ability, motivation and opportunity for individual and collective behavior in organizations. The appropriate behaviors are determined by the organization's strategy (Jackson, Schuler & Rivero, 1989). Therefore, the organization should select HR practices that drive the creation or acquisition of requisite ability and motivation in employees, as well as providing the opportunity to use skills and knowledge which are created or acquired in this way. What has most significantly developed in this perspective is the view of HR systems, that notes that HR practices must not only fit externally with strategic objectives, but must also be internally matched so that individual practices work together as a coherent system in influencing behavior and do not contradict or undermine one another. When these two fits are achieved, the organization benefits from the impact

of HR practices that can both enhance productivity and reduce unwanted costs, such as dysfunctional employee turnover (e.g., Becker & Huselid, 2006; Huselid, 1995).

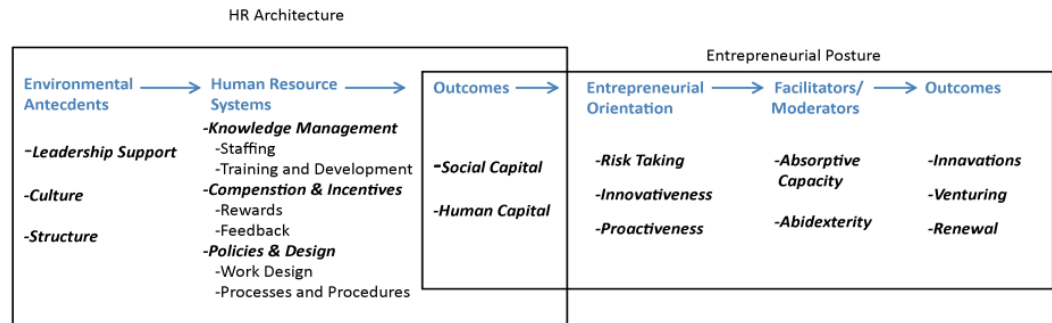
In the case of promoting CE, the evidence suggests that an important aspect of the HR system is that it promotes the autonomy and discretionary contributions of employees (Hayton, 2003; 2005). The first rationale for this is that autonomous strategic contributions are a necessary element in supporting the identification and pursuit of new opportunities (Burgelman & Sayles, 1986). The second is that it is through discretionary and prosocial contributions that necessary social capital can be built. This leads to the third theoretical lens through which the influence of HRM on CE can be understood: social exchange theory.

SOCIAL EXCHANGE THEORY

Social exchange theory is the basis for a number of concepts that are relevant to understanding CE: the creation of social capital, organizational citizenship, prosocial behaviors, perceived organizational support and relational psychological contracts. Each of these concepts is founded upon the universal norm of reciprocity whereby the receipt of positive treatment creates a motivation to reciprocate. Among employees this can lead to the development of trusting ties through which knowledge is exchanged (Bolino, Turnley & Bloodgood, 2002; Collins & Clark, 2003; Zhang, Wan & Jia, 2008). Between employees and their organization this leads to the perception of a supportive relationship in which employees are more willing to help the organization through spontaneous, voluntary contributions and to engage in innovative and proactive behaviors (e.g., Chandler et al., 2000; Eisenberger, Fasolo & LaMostro, 1990; Hayton, 2005; Zhang & Jia, 2010). Within the organization this also leads to the creation of greater levels of social capital, which creates the pathways through which knowledge is freely exchanged and ideas are created (Collins & Smith, 2006; Hayton, 2005; Kang et al., 2007).

These three perspectives, RBV/strategic capabilities, behavioral and social exchange, are mutually compatible and operate at different levels of abstraction as well as analysis. When focused on the organizational level of analysis, the RBV and strategic capabilities can be relied upon to explain sources of heterogeneity between firms. However, when explaining the nature and origins of resources and capabilities it is necessary to turn to behavioral and social exchange based explanations. The behavioral perspective is a contingency view and innovation and enterprise represent possible outcomes for which HRM investments may be developed. The behavioral perspective therefore explains the notion of fit/misfit, provides the foundation for understanding the HR system as a source of advantage (consistent with the RBV perspective) and points to employee behaviors as the foundation for these advantages. The social exchange perspective represents an important collection of explanations for the relational foundations of collaboration, cooperation, organizational learning and innovation. A full explanation for how, when and why HRM influences entrepreneurship must draw upon each of these perspectives to approach a complete understanding of the phenomenon.

Figure 1. A Process Model of the Integration of Human Resource Management and Corporate Entrepreneurship



HRM SYSTEMS AND CE: A PROPOSED PROCESS MODEL

Borrowing from the theoretical perspectives described earlier, the model in Figure 1 proposes that environmental antecedents impact the development and management of human resources in an entrepreneurial organization. Furthermore, as the model depicts, the influence of human resource practices bundled into a high performance work system (HPWS) is expected to positively affect the levels of human (knowledge, skills and abilities) and social capital (interaction, helping behaviors and relational connections) within the firm. Each of these resources has been linked to important individual, unit, and firm-level performance outcomes (Ployhart & Moliterno, 2011; Sun, Aryee, & Law, 2007; Wright & Boswell, 2002; Youndt & Snell, 2004). This model reflects the consistent theoretical work in the strategic HRM field that has argued that the link between HPWS and performance is channeled through a firm’s human resources (Wright, McMahan, & McWilliams, 1994). In particular, a firm’s human resources are seen as an important element in developing entrepreneurial behaviors that lead to a sustained competitive advantage (Wiklund & Shepherd, 2003). The specific model elements are described below.

ENVIRONMENTAL ANTECEDENTS

A growing body of research suggests that not only HRM practices but also broader concerns such as resource availability, organizational culture and leadership are all important influences on entrepreneurship within organizations (e.g., Hayton, 2005; Kuratko, Ireland & Hornsby, 2001; Zahra, Hayton & Salvato, 2004). The Corporate Entrepreneurial Assessment Instrument (CEAI) is one of the few research-based tools that attempt to measure an organization’s cultural or environmental readiness for entrepreneurial activity. Five factors have been identified including Top Management Support, Rewards and Reinforcement, Autonomy and Discretion, Time Availability and Organizational Boundaries. These factors reflect such issues as strategy and leadership, slack resources and organizational culture. The development of the survey items has been based on extensive research (e.g. Hornsby, Kuratko & Zahra, 2002; Hornsby, Kuratko,

Shepherd, & Bott, 2009; Hornsby, Kuratko, Holt, & Wales, 2012) that has gone through numerous iterations since publication of the original instrument (Kuratko, Montagno & Hornsby, 1990).

The importance of macro-level variables (company type, environment, structure, and decision-making with entrepreneurship) has long been acknowledged. Miller (1983), found that firm type (i.e., simple, planning, and organic) moderated the relationship between the firm's entrepreneurial behavior and several of the other variables identified. He concluded that varying conditions within a firm are associated with entrepreneurial strategy. Quinn (1985) identified a number of organizational antecedents for large corporations to consider when seeking innovative activity, including developing the atmosphere and vision required for such activity and structuring the organization for innovation. Sathe (1989) suggested that individual innovation is significantly associated with supportive leadership, organizational structure and the availability of resources. Hisrich and Peters (1986) established nine characteristics needed for an effective organizational environment for new venture creation, including management support, resources, experimentation and multi-functional teamwork. Zahra (1991) developed and tested a model that proposed the environment, corporate strategy and organization as the antecedents to corporate entrepreneurship. He also found evidence of a relationship between these antecedents and firm financial performance. Lastly, Damanpour (1991) conducted a meta-analysis of a large number of studies on corporate innovation and identified a number of factors that consistently appear to be related to corporate innovation activities such as specialization, managerial attitude and slack resources.

From this wide variety of factors that influence corporate entrepreneurship, we can distill the five recurring factors identified by the CEAI. The first element is management support, which relates to the willingness of senior managers to support an EO and to facilitate entrepreneurial ideas. The second factor is the use of rewards and reinforcement, as already described under our review of HRM practices. Autonomy and discretion make up the third factor. Employees must perceive an environment that empowers them to focus on entrepreneurial projects and make decisions about process and implementation. Time availability and its related resources form the fourth factor. Innovative activities require that employees perceive the availability of slack resources so that they can focus on entrepreneurial activity. Finally, the fifth element is organizational boundaries. Employees must perceive that the structures and processes in their organization do not obstruct idea implementation.

Numerous studies have been conducted to assess the reliability and validity of the CEAI. Kuratko, Montagno, and Hornsby (1990) initially established the Intrapreneurship Assessment Instrument (IAI) that included Top Management Support, Autonomy/Work Discretion, and Rewards/Reinforcement as factors related to an effective CE environment. Their results were reinforced by the findings of a study of 199 CEOs of U.S. based corporations, which examined these antecedents and the association between internal entrepreneurship and the financial performance of their firms (Zahra, 1991). Kuratko, Hornsby and Montagno (1999) expanded IAI and renamed it the CEAI. The expanded CEAI added Time Availability and Organizational Boundaries. Hornsby et al. (1999) supported the existence of these factors in a cross-cultural study of Canadian and U.S. firms. Hornsby, Kuratko, and Zahra (2002) found additional support for the five-factor CEAI and established sound psychometric properties.

Only a few works have addressed the role of organizational culture in promoting corporate entrepreneurship (e.g., Morris, Davis & Allen, 1994; Zahra et al., 2004). The limited research to date has tended to emphasize the role of individualism and collectivism, although, without doubt, other aspects of culture are expected to influence innovation and entrepreneurship (e.g., Chandler, Keller & Lyon, 2000). Individualism-collectivism is typically treated as a single continuum, with an organization able to be either more individualistic or more collectivistic. This dimension is relevant because what forms the foundation of innovation are the deviant behaviors of individuals willing to breach social norms, do something different and pursue individual interests that may lead to the acquisition or creation of new knowledge and ideas. However, for new knowledge to become embedded in products, processes or services it is essential that it be shared, combined and integrated, which requires communication and collaboration. Such behaviors are underpinned by more collectivistic values. As a result, a balance between collectivism and individualism has been argued for and empirical evidence supportive of this has been produced. Such a balance provides sufficient individualistic values that mavericks can emerge and pursue their own interests, while still rewarding and valuing collectively oriented collaboration and sharing. Both Morris et al. (1994) and Zahra et al. (2004) provide evidence for an inverted 'U' shaped relationship between an organization's scores on a scale of individualism-collectivism and measures of its entrepreneurship. In summary, there is a growing body of evidence both for the broad contextual factors described in research on organizational environments, cultures and leadership as well as the more specific dimensions of the human resource architecture. As described in Figure 1, these are interdependent rather than independent influences and it is rare for studies to include all of these dimensions simultaneously. Nevertheless, the evidence is quite strong that these elements, individually and in combination, are influential upon entrepreneurial orientation and outcomes.

HR SYSTEMS

Human resource practices that impact the human and social capital within a firm help to enhance levels of creativity, innovation, and entrepreneurial behavior and can be categorized as part of a High Performance Work System (HPWS). Bohlander and Snell (2004) suggest that HPWS is a result of "a specific combination of HR practices, work structures, and processes that maximizes employee knowledge, skill, commitment and flexibility". More specifically, Takeuchi, Lepak, Wang and Takeuchi (2007) state that "HPWS involve flexible job assignments, rigorous and selective staffing, extensive training and development, developmental and merit-based performance appraisal, competitive compensation, and extensive benefits" (p. 1069). According to Nadler, Gerstein and Shaw (1992), HPWS are implemented via "an organizational architecture that brings together work, people, technology and information in a manner that optimizes the congruence of fit among them in order to produce high performance in terms of the effective response to customer requirements and other environmental demands and opportunities". Nadler, Nadler, and Tushman (1997), meanwhile, identified ten important principles for designing an effective HPWS, which are listed in Table 1. Each

of these principles center around building a system based upon design clarity, empowerment, culture and accountability.

Table 1. Ten Principles for the Design of an HPWS

1	Start the design with an outward focus on customer requirements and then work backward to develop appropriate organizational forms and work processes.
2	Design work around self-managed teams responsible for producing complete products or processes.
3	Work must be guided by clear direction, explicit goals, and a full understanding of output requirements and measures of performance.
4	Variances should be detected and controlled at the source.
5	Design the social and technical systems to be closely linked.
6	Ensure continuous flow of information to all areas of the system.
7	Enriched and shared jobs increase the motivation of individuals and enhance flexibility in assigning work and solving problems.
8	Human resource practices must complement and strengthen the empowerment of teams and individuals.
9	The management structure, culture, and processes all must embrace and support the HPWS design.
10	The organization and its work units must have the capacity to reconfigure themselves to meet changing competitive conditions.

Adapted from Nadler, Nadler, & Tushman, 1997 Competing by Design: The Power of Organizational Architecture, Oxford University Press, pp. 147 - 153

Specifically, Nadler, Nadler, and Tushman argue that “the key to maintaining this flexible architecture is having clear design intent. If the purpose of the original design -- to enhance speed, accountability, customer focus, technological innovation, flattened hierarchy, or whatever -- is explicitly articulated, then there are clear boundaries for adding, deleting, or rearranging design elements (Nadler et al.)”. In the case of fostering innovation and entrepreneurship, the key is to strategically foster innovative behavior by designing human resource systems that support and provide incentives for such behavior.

Beugelsdijk (2008) studied the impact of changing six human resource practices on incremental and radical innovations. Incremental innovation focuses on smaller process improvements and changes and radical innovation includes major product or process changes and new product development. In a study of 988 Dutch firms, he found that firms with decentralized organizational structures and a focus on employee empowerment, as reflected in the use of task autonomy and flexible working hours, generated more product innovations. He also found that performance-based pay and training and development were positively associated with incremental innovation, but not with radical innovation. This work was further supported by Messersmith and Guthrie (2010) in a study of small U.S. based firms, in which a positive association was reported between the utilization of HPWS and both product and organizational innovation.

Three of the key human resource subsystems that create an HPWS can broadly be configured as “knowledge management”, “compensation and incentives management” and “policies and design”. Each of these practice-bundles is depicted in Figure 1 and described below.

KNOWLEDGE MANAGEMENT

Knowledge management includes attracting, retaining, and developing individuals with the knowledge, skills and abilities to meet the goals of an organization. This is the first component of creating an HPWS and includes utilizing selective staffing techniques and investing in appropriate training and development activities. A selective approach to staffing is distinguished by standardized practices, such as ability testing and structured interviews, to identify the best talent available (Huselid, 1995; Way, 2002). Selective staffing places an emphasis on both enhancing the quality of candidates and increasing the likelihood of finding quality employees with the right profiles of knowledge, skills and abilities to fit the firm's innovative stance. Utilizing a multi-hurdle selection process that allows for an assessment of an individual's creativity, intellect and ability to work well with others provides better information to decision makers and increases the firm's reputation by signaling to applicants that the organization is selective about whom it hires (Rodwell & Teo, 2008; Way, 2002). Greater rigor in the selection process will likely enhance the quality of human capital that will enter the organization and increase the likelihood that the firm will be able to produce new innovations.

In addition, firms willing to invest in training and development activities for their employees in job-specific, company-specific and industry-specific areas will likely see an increase in the levels of human capital within the firm (Kotey & Folker, 2007; Way, 2002). By pairing training systems with selective staffing the firm can experience enhancements to human capital endowments that will allow them to achieve higher, more productive levels of innovation (Thornhill, 2006). Employees who are able to continually refine their skill sets as necessary to exploit new market opportunities are likely to be more productive in entrepreneurial organizations. According to Hayton and Kelley (2006), corporate entrepreneurship is promoted by the simultaneous presence of competency in the four roles of innovating, brokering, championing and sponsoring. In order to foster corporate innovative activity, employee development activities focused on engendering these competencies should be a central focus of a corporate innovation strategy.

It bears noting that traditional selection and employee development procedures may not always be productive when it comes to hiring and developing entrepreneurial employees. Typical procedures tend to be job-based and are built to identify individuals who will adhere to policies and procedures, follow instruction and work towards fitting into a company profile. Very little empirical research exists to help us better understand the requirements for and the impact of directly seeking creative and entrepreneurial employees. However, there is ample discussion in the applied literature on some recommendations to attract, retain and develop these types of individuals (i.e., Cascio & Aguinis, 2008; Sutton, 2001).

COMPENSATION AND INCENTIVES MANAGEMENT

The second component in creating an HPWS involves employee compensations and incentives. The previous elements help to prepare employees and organizations for successful HPWS implementation and operation but without effective compensation management, the system will most likely fail. Organizations need to find a way to link pay with performance in order to incentivize employees to focus “on outcomes that are beneficial to themselves and the organization as a whole” (Bolander & Snell, 2004). Entrepreneurial behavior is developed and enhanced by reward systems that account for feedback and organizational goals while also emphasizing organizational results, collaboration and individual responsibility (Hayton, 2005; Hornsby et al., 1993).

Incentives can take many forms, with some examples being stock options, other equity plans, profit sharing plans, pay raises, bonuses for meeting performance targets and other monetary incentives. In addition, incentives can take the form of non-monetary options such as time off, flextime, autonomy and other special employee benefits. In terms of innovation and entrepreneurship, incentives should vary based on the need for incremental or radical innovations. Incremental innovations may be more suited to more traditional incentives including intrinsic rewards (flextime, autonomy, etc.) and extrinsic rewards (bonuses, merit increases, profit sharing, etc.) However, more radical innovations may require more substantial forms of incentives that are often more difficult to administer and tend to foster apprehension from top management. These incentives include organizational equity in the form of stock, stock options or even large equity stakes in venture spin-offs. Beugelsdijk (2008) affirmed this in his study of Dutch firms and found that incremental innovations are relatively easier to motivate with traditional HR practices but the ability to motivate radical innovations is much more limited because more sophisticated reward systems are not available.

In a study of CE in Israeli defense firms, Lerner, Azulay, and Tishler (2009) confirmed the importance of building effective entrepreneurship-oriented compensation programs. The findings of their research suggest that management should not only call for compensation for entrepreneurs but should also make sure that the system of reward they choose is important and acceptable to the entrepreneurs. Their results show that there is a large gap between the compensations that corporate entrepreneurs actually desire and the ones actually practiced by the enterprise. They also found that even when more desirable compensation programs were utilized, many of the corporate entrepreneur respondents were not aware that such incentives were in place.

POLICIES AND DESIGN

The design and administration of organizational policies and procedures also forms an important aspect of an HPWS. An entrepreneurial firm should place a greater emphasis on designing policies and structures that enhance participation, open communication and collaboration. Furthermore, providing an increased opportunity to participate in decisions is critical to creating an entrepreneurial orientation. With greater information sharing and transparent communication, organizations can give managerial support and help to equip

individuals at all levels of the organization. By enabling collaboration and open communication, an organizational structure can decrease impediments to their pursuit of entrepreneurial initiatives (Hornsby et al., 1993; Hornsby et al., 1999; Hornsby et al., 2002).

Conversely, innovation and entrepreneurial behavior are limited by organizations that focus on policies that create boundaries and overly regulate individual behavior. Traditional human resource practices such as creating job descriptions, policy manuals, safety manuals and operating standards can inhibit desired behavior. A manager's rigid enforcement of policies can also have unwanted effects on employee behavior. While some of these are necessary and important to the operation of the organization (especially those legally required), these traditional practices may also inhibit the creativity and entrepreneurial behavior desired when implementing a corporate entrepreneurship strategy.

Hayton (2003) suggests that human resource management practices fall into two categories: traditional HR practices and discretionary HRM. The traditional practices focus upon "clearly defining jobs in terms of their tasks, duties, and responsibilities; carefully structuring equitable rewards for those jobs; and monitoring individual performance". These practices are incongruent with the creativity, innovation and risk taking required for innovation and entrepreneurship. Discretionary HRM practices, on the other hand, focus on employees' performance by offering incentives and mechanisms for exchanging knowledge and encouraging organizational learning. In a study of 99 small to medium enterprises, Hayton found that discretionary HR practices, specifically discretionary behavior, knowledge sharing and organizational learning, were positively associated with innovative performance. This positive relationship was strongest in high technology industries.

As discussed, the discretionary HRM practices related to information sharing and employee involvement are recognized as key elements of HPWS because they allow employees to make decisions that affect their immediate environment, which in turn affects the entire organization. This empowerment leads to a greater commitment to work and better organizational citizenship, which should ultimately enhance both the human and social capital within firms.

ENTREPRENEURIAL ORIENTATION

Developing a firm-level entrepreneurial orientation (EO) follows from the development of the corresponding necessary practices at the top-levels of the organization. This allows for the implementation of an HPWS that generates the requisite human and social capital within the firm for pursuing a corporate entrepreneurship strategy. EO is an organizational state or quality that is defined in terms of several behavioral dimensions. Based on the pioneering work of Miller (1983), Covin and Slevin (1989) defined EO as implying the presence of risk-taking, innovative and proactive organizational behavior.

At least three models suggested by Covin and Slevin (1991), Lumpkin and Dess (1996) and Ireland, Covin and Kuratko (2009) incorporate the antecedents and/or consequences of the organizational-level phenomenon of EO. The Ireland, Covin and Kuratko model of a strategy based on corporate entrepreneurship (CE) differs from the others in four ways: (1) by conceptualizing EO as an

organizational state, (2) by specifying organizational locations from which innovative behavior may emerge, (3) by specifying a “philosophical” component of a CE strategy and (4) by specifying that organizations can pursue innovation as a separate and identifiable strategy. It is our contention that human resource management systems, as described earlier, play a major role in the execution of an entrepreneurship strategy that can lead to EO. The human resource practices that create an HPWS facilitate the execution of such a strategy. Many studies support a positive correlation between EO and organizational performance. Given the multi-dimensional nature of performance, there have been many studies that have examined the connection between EO and both financial and nonfinancial performance. The financial indicators examined have linked EO to growth, sales and profit. Nonfinancial measures include the number of ideas implemented and the satisfaction of the owner, organizational leaders or employees. These studies have generally supported a positive connection between EO and firm performance, particularly financial performance. This support has been underscored by a recent meta-analysis completed by Rauch et al. who observed that the Covin and Slevin EO scale possessed a positive, moderately large correlation with performance ($r = .235$). The Rauch et al. study equates the strength of the EO-performance relationship to that of taking a “sleeping pill and having a better night’s sleep”. These results augment a growing understanding within the field that EO has a positive influence on bottom-line results.

ENTREPRENEURIAL MODERATORS/FACILITATORS

As previously stated, corporate entrepreneurship is dependent upon a capacity to identify new opportunities, acquire information and integrate new knowledge. As indicated by Figure 1, the relationship between entrepreneurial orientation and outcomes/performance is not without important contingencies. Two which have emerged consistently in research over the last decade are absorptive capacity and ambidexterity. These two variables are expected to moderate the association between EO and organizational performance, measured in terms of market or financial outcomes. We now describe these relationships in more detail.

The ability to acquire and integrate new knowledge is generally referred to as “absorptive capacity”. Organizations should focus on balancing exploration activities with the need to focus internally and exploit existing knowledge resources. This need for a balanced focus is referred to as ambidexterity. Both absorptive capacity and ambidexterity moderate the impact of an organization’s entrepreneurial orientation on performance. A description of these moderators is provided below.

ABSORPTIVE CAPACITY

When organizational environments are characterized by uncertainty and change, analyzing cause and effect relationships, such as those between behaviors and outcomes, becomes increasingly difficult (Murray, 1984; Teece & Pisano, 1994). In such environments, it becomes even more important for organizations to understand how augmenting their existing processes with additional capabilities can help them become more successful (Zahra, Filatotchev, & Wright, 2009). In addition, the ongoing acquisition and utilization of knowledge become even more critical (Bottazzi, Dosi, & Rocchetti, 2001; Chandler & Lyon, 2009).

The knowledge-based view of firms suggests that knowledge resources are essential for facilitating an organization's performance (Grant, 1996). Knowledge of internal capabilities enables managers to more effectively align resources with initiatives (Kor & Mahoney, 2005). The ability to access heterogeneous knowledge bases and the differential use of similar knowledge bases can assist an organization in achieving its goals and gaining advantages over its rivals. In particular, when different but related innovations undergo R&D efforts, complementarities can be created that enhance the development of each innovation (Cohen & Malerba, 2001). Moreover, to the extent that much of the knowledge created during this process is tacit or intangible, this knowledge becomes increasingly important as organizations grow (Langlois & Robertson, 1996; Sanders & Boivie, 2004). Thus, an organization's ability to understand and utilize knowledge is instrumental in its efforts to develop in competitive environments.

Central to an organization's ability to comprehend and use knowledge is absorptive capacity. Absorptive capacity could be fully defined as the ability to "recognize the value of new, external information, assimilate it, and apply it to commercial ends" (Cohen & Levinthal, 1990: 128). Consistent with this, Zahra and George (2002: 186) defined absorptive capacity as "a set of organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability". Zahra and George (2002) further separated absorptive capacity into potential and realized forms. Potential absorptive capacity is the acquisition and assimilation of knowledge, while realized absorptive capacity is the transformation and exploitation of knowledge. Together, these two forms of absorptive capacity provide an organization with the ability to use knowledge to innovate.

In particular, absorptive capacity influences an organization's ability to make the most of existing knowledge stocks and flows (Dierickx & Cool, 1989). This knowledge can flow from a variety of sources, including customers (von Hippel, 1988), geographic locations, alliances and research and development activities (DeCarolis & Deeds, 1999). Knowledge resources can be very valuable (Grant, 1996; Kogut & Zander, 1992) but those related to innovation can be difficult to manage effectively because of the information asymmetry that is present throughout organizations (He & Wang, 2009). Knowledge and the ability to utilize it are not spread uniformly around organizations. If it is not broadly disseminated, there may thus be inefficiency (Lenox & King, 2004).

A widely used indicator of absorptive capacity is investment in R&D (e.g., Zahra & Hayton, 2008). Such investments create a stock of knowledge that can facilitate the identification of the relevant new knowledge and technology that

underpins innovation and entrepreneurship (Cohen & Levinthal, 1990). These investments in knowledge stocks are needed to support both the recognition and the assimilation of new knowledge. Without them, the workforce's ability and opportunities for entrepreneurial action would be undermined. Absorptive capacity therefore serves as a constraint on organizations' capacity for generating value from EO. While the correct HR architecture and the organizational environment might promote an innovative, risk seeking and proactive workforce, without sufficient capacity to identify, acquire and assimilate new knowledge within the organization, there will not be sufficient "raw materials" for innovation and entrepreneurship to take place.

AMBIDEXTERITY

Organizations vary in the extent to which they focus on creating new business opportunities rather than attempting to capitalize on existing ones (Mintzberg, 1973; Lamberg, Tikkanen, Nokelainen, & Suur-Inkeroinen, 2009; Schmitt, Probst & Tushman, 2010). Although some existing businesses (for example, product lines) are prone to decline because of environmental changes, it is generally inefficient and extremely difficult to rely solely on the establishment of new businesses to increase performance. Therefore, most successful entrepreneurial organizations are likely to deploy some of their resources to efficiently manage existing businesses, termed exploitation, and some of their resources in efforts to create new businesses, termed exploration (Murray, 1984). Although there can be a wide variety in the emphasis that organizations place on exploitation or exploration, some type of balance between the two is usually necessary to avoid severe misfit on one of them (Gresov, 1989), constraints associated with premature lock-in (Rivkin & Siggelkow, 2006) and negative performance implications (Van Looy, Martens, & Debackere, 2005). Those organizations that are capable of simultaneously exploring innovations and exploiting them are referred to as ambidextrous (Duncan, 1976; Tushman & O'Reilly, 1996).

While it appears logical to engage in both exploitation and exploration simultaneously (Greve, 2007), organizations may have difficulty finding the right balance between the two and they may not be equally adept at managing both types of processes (Ebben & Johnson, 2005; Levinthal & March, 1993; Schmitt et al., 2010). For example, an organization may have managerial preferences for internally or externally derived knowledge and this could influence whether the organization focuses on exploitation or exploration (Menon & Pfeffer, 2003). In addition, organizations tend to continue doing what they already know how to do so they may misapply existing solutions (Cohen, March, & Olsen, 1972) or rely on previous capabilities that have become core rigidities (Leonard-Barton, 1992). These conditions can lead to an overreliance on exploration or exploitation. The general recommendation is for organizations to be flexible in seeking valuable opportunities but then committed to their exploitation once they have been discovered (Ghemawat, 1991). Exploitation enables organizations to capture the potential returns identified with opportunities (Hill & Roethaermel, 2003). However, too much focus on exploitation may provide short-term benefits but damage an organization's ability to profit from future opportunities and subsequently survive in the long run (Van Looy, Martens, & Debackere, 2005).

Part of the challenge associated with being ambidextrous is that the routines involved with exploitation are often different from and interfere with those associated with exploration (Benner & Tushman, 2003; Duncan, 1976). For example, exploitation involves working with existing knowledge (Lechner, Frankerburger & Floyd, 2010) and focusing on such things as seeking control, certainty and invariance in order to extract maximum profits from existing capabilities and positions (He & Wong, 2004; March, 1991). If not managed appropriately, goals of this type can interfere with the search for and promotion of future opportunities (Benner & Tushman, 2003; Sterman, Repenning, & Kofman, 1997). Moreover, when these efforts require significant change, the more institutionalized the exploitation activities are, the more resistance there is likely to be to change efforts (Giddens, 1984; Jarzabkowski, 2008). In other words, future adaptation can be impaired if an organization has adapted too well to its current environment (Levinthal, 1994). In contrast, an excessive focus on exploration can also negatively influence performance because it inhibits them from profiting from previously captured opportunities. For example, excessive exploration can cause the disruption of routine processes associated with exploitation, thereby causing inefficiencies (Hannan & Freeman, 1984).

In addition to the above, newer organizations may not have sufficient resources to easily and productively engage in both exploitation and exploration at the same time (March, 1991). Therefore, it is particularly important for these organizations to be ambidextrous (Mahoney & Pandian, 1992; Penrose, 1959; Van Looy, 2005). Using organizational resources for exploitation and exploration efforts can lead to a sustainable competitive advantage (Sirmon, Hitt, & Ireland, 2007). However, it can be difficult switching between these efforts because organizational members who benefit from an organization's current power structures are not inclined to risk a loss to their organizational standing as the organization transforms from one mode to the other (Pfeffer, 1992).

One option to enhance the ability to be ambidextrous is to isolate exploration and exploitation activities either temporally or spatially (Benner & Tushman, 2003; Christensen & Bower, 1996; Nickerson & Zenger, 2002). Along these lines, Thompson (1967) suggested that organizations isolate their technical cores from external uncertainty in order to improve efficiency, while separately dealing with that uncertainty outside of the technical cores in order to enhance adaptation of the organization. This type of decoupling can increase flexibility (Doz & Kosonen, 2010). In a similar fashion, managers can try to develop the parts of their organizations that have achieved successful exploration and need to operate in an exploitative manner to enhance performance. Simultaneously, managers can strengthen exploration efforts, such as developing new technologies, while using a different set of competences (Danneels, 2008). In addition, semi-structures can be used to enable simultaneous actions associated with efficiency and exploration (Brown & Eisenhardt, 1998). These structures can be designed to provide some guidance for efficiency purposes and some flexibility for adjustment when engaging in exploration. Both isolation and semi-structures can enable organizations to enhance their ambidexterity and, subsequently, improve performance (Eisenhardt, Furr & Bingham., 2010). Ambidexterity therefore represents an important moderator of the association between EO and measures of organizational performance. The relationship between EO and performance is always constrained by the degree to which EO is balanced by the continued maintenance of exploitative capabilities. If EO is not

balanced with exploitative capabilities, then organizations may find themselves remaining in an exploratory mode and failing to exploit their existing capacities. While the addition of new businesses and the development of new opportunities can add to top line growth (e.g., Rauch, Wikilund, Lumpkin & Frese, 2009; Zahra, 1996), the literature on ambidexterity suggests that economic efficiency and long run survival depend upon the ability to successfully exploit newly built capabilities. Therefore, ambidexterity is expected to positively moderate the association between EO and diverse measures of organizational performance such as sales growth, financial performance and organizational survival.

FUTURE RESEARCH NEEDS

The literature on the relationship between investments in human resources and corporate entrepreneurship processes and outcomes has grown steadily over the last two decades. In our review, we have attempted to organize these within an integrative framework. We are in a position to identify numerous specific predictions regarding HR practices and their related environmental variables that facilitate organizational innovation and adaptation. Yet, while much research has been undertaken, many questions remain. In this closing section, we will highlight three major issues, which we believe hold significant theoretical as well as practical significance.

The first big question that future research should address is this: how do HR architectures contribute to ambidexterity, particularly contextual or behavioral ambidexterity? (Gibson & Birkinshaw, 2004). Similarly to exploratory and exploitative learning, the twin capabilities of opportunity identification and knowledge integration rest on distinct processes and underlying behaviors (Kang et al., 2007; Zahra & George, 2002). Opportunity identification depends upon exploratory learning that breaks away from existing routines and capabilities (Burgelman, 1983; Christensen, 1997). The acquisition of new knowledge, meanwhile, depends upon the creation of informal networks that extend beyond organizational boundaries (Day, 1994; Kang et al., 2007). This type of learning frequently emerges as a result of bottom-up processes involving autonomous contributions from middle managers and the leveraging of social networks inside and outside of the organization (e.g., Burgelman, 1983; Floyd & Lane, 2000; Floyd & Wooldridge, 1999; Mom, van den Bosch, & Volberda, 2007). In contrast, knowledge integration is intrinsically dependent upon existing knowledge stocks and capabilities (Cohen & Levinthal, 1990; Mom et al., 2007; Zahra & George, 2002). It is influenced by current strategic objectives and concerns for the implementation of quality and efficiency discipline (e.g., Burgelman, 1983; Mom et al., 2007).

The distinction between opportunity identification and knowledge integration extends to the behaviors required to support these capabilities. Since opportunity identification necessarily involves the ability to not be constrained by existing norms and beliefs concerning means-end relationships, the spontaneous exploring and probing behaviors associated with opportunity identification may be described as individualistic, autonomous and routine-agnostic (e.g., Floyd & Wooldridge 1999). In contrast, knowledge integration requires consensus building, the invocation of shared goals, leadership and strong organizational knowledge (e.g., Burgelman, 1983; Burgelman & Sayles,

1986; Day, 1994; Zahra & Nielsen, 2002). The integration of new knowledge with existing knowledge and capabilities involves social interactions requiring strong internal organizational networks (Grant, 1996; Kang et al., 2007; Nahapiet & Goshal, 1998; Zahra & Nielsen, 2002). Behaviors associated with knowledge integration may be described as collaborative, routine enhancing and oriented towards the collective (e.g., Grant, 1996; Morris et al., 1993). The concept of contextual ambidexterity (Gibson & Birkinshaw, 2004; Simsek, 2009) is useful for understanding the conditions under which an organization can achieve both simultaneously.

Contextual ambidexterity describes situations where two distinct forms of behavior are desired within a single undifferentiated organization or business unit for which structural forms of ambidexterity are not appropriate or feasible (Gibson & Birkinshaw, 2004; Lubatkin, Simsek, Ling, & Veiga, 2006; Simsek, 2009). Contextual ambidexterity involves the creation of conditions in which the organization or unit is adaptable to changes in the task environment and simultaneously is able to pursue internal alignment to the top-down objectives of efficiency and/or quality of execution. Thus, contextual ambidexterity is applicable to the dilemma of creating both opportunity identification and knowledge integration capabilities. Gibson and Birkinshaw proposed that organizational context, including incentive systems, career management systems, culture and climate all contribute to what they term contextual ambidexterity and what Simsek labels behavioral ambidexterity. Work by Gibson and Birkinshaw and Simsek suggests that the HR function may play an important role in the production of behavioral ambidexterity. Future research to understand this role would not only enhance understanding of how HRM can support key entrepreneurial capabilities but also address the broader concern of how to build ambidextrous organizations.

A second key question that remains unresolved in the HR literature and holds broader significance is whether differentiated HR architectures (Lepak & Snell, 1999; 2002) help or hurt CE and its related outcomes. HR architectures may be unitary, with all employees experiencing similar terms, conditions, contracts types and exchange relationships. Alternately, they may be differentiated, with each employee or group of employees being treated differently. Several scholars have argued that rather than investing equally in all segments of the workforce, organizations should differentiate their HR architectures to enhance employment flexibility (Boxall, 1998; Lepak, Takeuchi & Snell, 2003; Tsui et al., 1997; Wright & Snell, 1998). Evidence suggests that such differentiation does occur (Lepak & Snell, 2002; Lepak et al., 2003). Employees performing strategically core work are bound to the organization by a high level of mutual investment and commitment, while non-core employees are party to more transactional relationships (Lepak & Snell, 2002; Lepak et al., 2003).

Differentiation allows organizations to maintain a strong strategic core (Boxall, 1998) while having the flexibility to acquire non-core human capital on an as-needed basis (Lepak & Snell, 2002; Lepak et al., 2003). Differentiation also has cost advantages, because it avoids over-investment in non-core employees (e.g., Tsui, Pearce, Porter, & Tripoli, 1997) and preserves resources for other activities. The performance benefits of differentiation are distinct from those of investments in high commitment HR. It is possible for all employees to be covered by a high commitment architecture that is undifferentiated. It is also possible, in high commitment HR, to have a differentiated architecture that does

not have high levels of investment. In such a case, different employee groups may receive different treatment, but none are exposed to high commitment practices. The performance outcomes of these different combinations have yet to be empirically explored. On the one hand, differentiated architectures are expected to be most efficient, by targeting only strategically core employees with high commitment practices. However, as corporate entrepreneurship represents a knowledge and learning-based strategy, where new knowledge is not only generated but also must be integrated, it may be challenging to isolate an 'entrepreneurial core' within a workforce. Differentiation might undermine the very cooperation and coordination required to support a learning and risk taking strategy. As this is an open question, research is much needed to test both the differentiation hypothesis in general and its impact on entrepreneurial outcomes in particular.

A third major question which awaits deeper analysis is the issue of complementarities between HR architectures and capabilities that support CE (Chadwick & Dabu, 2009). The most commonly invoked explanation for the strategic role of HRM policies and practices is that they serve to attract, develop, motivate and retain human resources, which are assets that possess the desirable characteristics described by the resource-based view (RBV): value, scarcity, inimitability, non-tradability and non-substitutability (e.g., Barney, 1991; Boxall & Purcell, 2000; Wright & McMahan, 1992; Wright, Dunford & Snell, 2001). Human resources are distinctive because they are not depleted with use and they possess free will (Coff, 1997). As a result, managers are not only challenged to find ways to acquire these resources, but also to motivate and retain them so that their value creating potential can be realized.

In a search for a deeper theoretical understanding of the ways in which HRM practices and systems influence organizational performance, many scholars have turned to the mediating processes through which that influence occurs. For example, research has examined the mediating roles of work climate, positive social exchange relationships, organizational commitment, employee citizenship behaviors and employee turnover (e.g., Batt, 2002; Bowen & Ostroff, 2004; Gelade & Ivery, 2006; Sun, Aryee & Law, 2007). Enhanced HRM performance leads to enhance workforce effectiveness, productivity and reduced costs associated with turnover, which impact financial and market performance (e.g., Batt, 2002; Huselid, 1995). Without effective HRM the quality of the workforce, would be diminished. Not only is bottom line performance enhanced through these mediating processes, but also top line performance. High performance and commitment-focused HR practices positively influence employee cooperation, which in turn influence knowledge exchange, learning, innovation and consequently top line growth (e.g., Collins & Smith, 2006; Zhang, Wan & Jia, 2008).

These explanations are consistent with what Makadok (2001) refers to as 'resource picking' advantages. HRM activities provide the organization with strategic resources that create value and are difficult to imitate: "managers gather information and analysis to outsmart the resource market in picking resources" (Makadok, 2001; p.387). Rents are generated when a firm is better at resource picking because it is able to obtain greater value from the resource than is paid for it. This direct explanation for the creation of 'traditional' Ricardian rents is implicit in most models of the strategic impact of HRM (e.g., Combs et al., 2006; Huselid, 1995; Lengnick-Hall et al., 2009). The HR system plays a

role in the development and retention of strategically valuable human capital and the appropriation of the benefits of employee activities (e.g., Kamoche, 1994; Kamoche & Mueller, 1995; Lado & Wilson, 1994). The return is higher levels of work effort and better retention rates which translate into superior organizational performance that exceeds the cost of investment (e.g., Becker & Huselid 1998; Combs et al., 2006; Huselid, 1995).

Resource picking represents one explanation for why investments in human resources will promote organizational performance. However, scholars have often voiced concern that this explanation is insufficient (e.g., Becker & Huselid, 2006; Huselid & Becker, 2011; Wright et al., 2001). Not all positions in an organization require human capital that is unique or scarce, and not all positions are equally influential upon core value creation processes (Lepak & Snell, 1999). Furthermore, the human capital that is the source of value creation is often specific to individual workers who are highly mobile, and firm specific skills can be developed through training. These observations lead to the conclusion that "instances when human resources can generate traditional Ricardian rents may be rare and often transitory" (Chadwick & Dabu, 2009; p.256).

A second route to performance is the combination of resources and processes to build organizational capabilities (Chadwick & Dabu, 2009; Wright et al, 2001). Capabilities refer to a firm's capacity to deploy resources including knowledge, usually in combination with strategically important organizational processes, to affect a desired end (e.g., Amit & Shoemaker, 1993; Grant, 1996). Strategically important processes are those which lead to the creation of valued product attributes (Prahalad & Hamel, 1990). Capabilities are an 'intermediate good' (Amit & Schoemaker, 1993) that create value by enhancing the productivity of resources, and thereby influence more distal organizational performance metrics. The complementarity between resources and strategic processes is highly firm specific and path-dependent and leads to heterogeneity across firms (e.g., Teece et al., 1997). The development and specialization of complementary resources and processes over time increases causal ambiguity, and creates time compression diseconomies (Dierickx & Cool, 1989). Thus, capability-based advantages are difficult to imitate or acquire and form a source of 'non-traditional' Ricardian rents (Makadok, 2001).

The most important implication of this literature is that capabilities are influenced by investments in human resources in combination with other processes and technologies (Wright et al., 2001). However, this theoretical framing of the role of HRM has yet to receive significant empirical attention. It implies a moderating or interactive association between bundles of HR practices and specific organizational practices, processes or routines. Capabilities would be the unobservable intermediate outcome of this interaction. Entrepreneurial outcomes and other aspects of performance would then be mediated by the creation of those capabilities. The implication is a more subtle and complex relationship. It is also an open question whether the resource picking and capability building arguments are complements or substitutes. Future research needs to identify specific entrepreneurial capabilities and investigate the support that HR provides for those capabilities in interaction with key learning processes.

CONCLUSION

Much has been learned about the roles of the HR function and its associated constructs in supporting a strategy of entrepreneurship in established organizations. Yet, we are only at the beginning of our understanding. In many ways, theoretical development lags behind empirical work at this stage. Several significant challenges, as outlined above, need to be resolved by scholars in the future. We are confident that the field's growing understanding of these phenomena can contribute to enhanced organizational capacity for entrepreneurial performance.

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Part III: Corporate Entrepreneurship in Context

1. From Entrepreneurial Orientation to Performance: inside the black box of corporate entrepreneurship

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INTRODUCTION

In the 2011 Special Issue on entrepreneurial orientation (EO) of *Entrepreneurship: Theory and Practice*, Danny Miller (201: 873) wrote, "When I attended a local conference in 2004, an article on EO was being presented. When the speaker put up his first slide with EO in the title, I asked: "What does EO stand for?" The incredulous speaker responded, "You are kidding, right?" I was not." As a researcher on organizational configurations, Miller introduced the EO concept merely as a side issue to illustrate the predictive power of organizational configurations. From these beginnings, after a long period of incubation, EO has emerged as a concept that describes entrepreneurship in and of established organizations.

One of the reasons for the popularity of EO may be that it allowed researchers to take "entrepreneurship" out of the startup context and apply it to existing firms. This was termed "corporate entrepreneurship" (CE) and was defined as "entrepreneurship within an existing organization, including emergent behavioral intentions and behaviors of an organization related to departures from the customary" (Antoncic & Prodan, 2006: 1). In this regard, George and Mason (2011) argue that EO is used as a direct measure for CE and as a key antecedent to CE activities. Interest in CE from both academics and practitioners is spawned by the idea that CE is linked to firm performance and the creation of a stream of sustainable competitive advantages. Key research questions revolve around the performance impact of CE and the theoretical reasons for why CE is linked to firm performance.

Since Miller (1983), CE research has focused on entrepreneurial orientation (EO) as a core construct. The popularity of EO is illustrated by the large number of papers on the topic: there are now more than 300 papers on SCOPUS which have "EO" in their abstract, title or key words and 236 which have "corporate entrepreneurship". The relevance of EO research was underscored by a meta-analysis on the EO-performance relationship (Rauch, Wiklund, Lumpkin & Frese, 2009) that indicated a moderately strong EO-performance relationship. The relationship remains robust under different conceptualizations of EO, cultural contexts and despite variations in other internal and external moderators such as business size and the technological intensity of the relevant industry. Taken this EO-performance relationship as a stylized fact, unanswered questions on the EO-performance relationship are becoming more urgent: just how is EO linked to performance?

Research has framed EO as a strategic orientation, a concept used by the global managements of companies that can be interpreted as a "dominant logic" (Prahalad & Bettis, 1986) or, to use Mintzberg's definition (1987), as encompassing instances of "strategy as perspective" that influence downstream programmes, processes and actions. Examples of strategic orientations include market orientation (Gotteland, Haon & Jolibert, 2009). Miller (1983: 771) defines an entrepreneurial firm in this way: "an entrepreneurial firm is one that engages in product-market innovation, undertakes somewhat risky ventures, and is first to come up with 'proactive' innovations, beating competitors to the punch". Innovativeness, risk taking, and proactiveness have since begun to be seen as the core elements of EO and a more nuanced conceptualization has recently been advocated (George & Mason, 2011).

The link between EO and performance can, on an abstract level, be interpreted as follows: EO is a dynamic capability that can lead to valuable, rare, inimitable and non-substituable resource combinations (Alvarez & Busenitz, 2001). On a more detailed level, the transmission mechanisms between “orientations” and more distal measures such as firm performance still need to be explored. Going back to the interpretation of a strategic orientation as a construct that reflects a type of dominant logic, it is obvious that EO itself is inert; it does not “act”, but it provides a framework for action. Employees in a firm shaped by EO need to act in a specific organizational context to improve their performance. Lumpkin and Dess (1996) discuss how there must be something between EO and performance that acts as a “transmission belt”. I will discuss (section 2) research into mediators, corporate venturing as a process (section 3) and the configurational embeddedness of CE tools (section 3) as potential ways to conceptualize the link between EO and performance. Through this discussion, the line of arguments moves from simple (one mediator) to more complex (a process as a chain of mediators) to most complex (configurational embeddedness).

TRANSMISSIONS BETWEEN EO AND PERFORMANCE: MEDIATION OF THE EO-PERFORMANCE RELATIONSHIP

Conceptually, a mediator is a construct that “represents the generative mechanism through which the focal independent variable is able to influence the dependent variable of interest” (Baron & Kenny, 1986: 1173). A mediator analysis is then used to establish through what mechanism an independent variable exerts its influence on a dependent variable. In the context of EO, Lumpkin and Dess (1996) suggest that there may also be mediators in the relationship between EO and performance. Specifically, they suggest that the degree to which “organizational activities” are integrated serves as a mediator. In short, it is through organizational activities that EO is made effective. Knowledge about these mediators informs the decision makers of the activities that are necessary to make EOs effective.

A study of the literature on EO mediation (defined as all articles on SCOPUS with “entrepreneurial orientation” and “mediat*” in their titles, abstracts or key words) reveals that the idea of mediation has been explored only in a small fraction of EO papers: Out of 311 papers that Scopus lists for EO, a search for EO mediation resulted in only 27 papers, 15 of which analyze mediators of the relationship between an EO and a dependent variable (mostly firm performance).

The results indicate that the mediation of EO has been analyzed in many different contexts, with different operationalizations of EO and, most importantly, with many different potential mediators such as innovativeness, organizational structure, commitment and, most of all, organizational learning, which is analyzed in 5 out of the 15 papers. In a large majority of the papers, at least partial mediation was found, which hints at the fact that the particular mediator may be acting as a transmission mechanism between EO and firm performance (table 1)

Table 1. Mediators of the EO – Performance Relationship

Author/s	EO	Mediator	Dependent variable	Result	N	Sample
Colton, et al. (2010)	Covin and Slevin (1991)	Brand strength, supplier relations	Revenue growth; performance against objectives	NM	174	e-commerce retail
Du, et al. (2010)	Proactiveness	Certification	Sales growth, market share growth, profit growth	PM	632	SME
Harms, et al. (2010)	Miller (1983)	Innovativeness, Management by Objectives	Sales growth	PM	165	gazelles
Helm, et al. (2010)	risk taking propensity; proactiveness	Innovation	Subjective indicators reflecting sales growth, cash flow & profitability	Mediation	165	Spin-offs
Jiao, et al. (2010)	Covin and Slevin (1989)	Organizational learning	Dynamic capabilities	PM	-	high tech
Rhee, et al. (2010)	risk taking; proactiveness	Learning orientation	Innovativeness	PM	333	technology intensive
Fis and Cetindamar (2009)	Covin and Slevin (1989)	Managerial support; Corporate Entrepreneurship activities	Growth, profitability, non-financial performance	Mediation	347	heterogeneous
Kaimau-Maina (2009)	Covin and Slevin (1989)	Engagement in college (personal level)	Attitudes, self-efficacy	PM	700	students
Li (2009)	Lumpkin and Dess (1996)	Knowledge creation processes	Satisfaction with efficiency, growth, and profitability	PM	165	heterogeneous
Lin, et al. (2009)	Covin and Slevin (1989)	Learning / Org. structure	business performance	Mediation / NM	333	technology intensive
Wang (2008)	Miller (1983); Covin and Slevin (1989)	Learning orientation	Profitability and sales growth rel. to competitors	Mediation	213	medium-to-large firms
Wu (2008)	Lumpkin and Dess (2001)	Human capital, social capital, customer capital	Innovativeness	Mediation	159	heterogeneous
Peng (2007, 2008)	Covin and Slevin (1989)	Learning orientation	Innovativeness/ business performance (subjective)	NM	333	technology intensive
DeClerq and Rius (2007)	Lumpkin and Dess (1996)	Organizational commitment	Effort (time commitment and work intensity)	Mediation	863	SME
Keh, et al. (2007)	Covin and Slevin (1989)	information acquisition and utilization	Firm performance, financial and non-financial	PM	294	small

NM = No mediation; PM = Partial Mediation

An example of the research stream on organizational learning is the work of Wang (2008), who analyses the mediation of EO-performance by a learning orientation (Kreiser, 2011). She writes (2008: 636): “to reap the benefits of entrepreneurial efforts, a firm must be committed to learning, open-minded to new information and new ways of doing things [...]. Hence, it is through LO that a firm maximizes the impact of EO on firm performance. Overall, EO opens up a scope for learning and particularly favors divergent learning, while LO emphasizes both intensity and a common direction of learning, and hence the convergent effect of learning”. With this, she adds a temporal dimension to the EO-performance relationship. She also makes clear that it is not through a one-off entrepreneurial action that a firm becomes successful, but through the strategic use of entrepreneurship (Harms, Walsh & Groen, 2012; Hitt, Ireland, Sirmon, & Trahms, 2011).

Other examples of research on these organizational activities are presented by Harms et al. (Harms, Reschke, Kraus, & Fink, 2010), who argue that management by objectives (a style of management which puts growth as a key organizational goal) energizes employees to pursue entrepreneurial opportunities, which may ultimately lead to growth. Helm et al. (Helm, Mauroner, & Dowling, 2010) argue that innovations are the mechanism that link EO and performance. They capitalize on the idea that innovation is a proximal performance indicator and suggest that it is, in a further step, also linked to firm performance as a distal performance indicator.

In the quest to find organizational activities that can serve as a transmission mechanism between EO and performance, researchers can draw from many unexplored areas such as the studies of strategies (Garcia & Lajara, 2002) or management approaches. A potential source could be the analysis of entrepreneurial management (EM). EM encompasses a collection of management approaches that are geared towards the exploitation of opportunities without regard to the resources currently controlled (Stevenson & Jarillo, 1990). These management approaches include, for example, organic management structures, reward philosophies that are geared towards growth, and company-wide beliefs that growth and the pursuit of opportunities are activities worth pursuing (Brown, Davidsson & Wiklund, 2001). With these approaches, an entrepreneurial orientation may effectively translate into performance.

While there are many potentially interesting mediation hypotheses which would warrant analysis, methodological considerations should also be taken into account. A test for mediation requires that there already be a strong and significant relationship between the independent variable and the dependent variable (Baron & Kenny, 1986). While the meta-analysis of the EO-performance relationship hints at a robust relationship, it might not under all circumstances be so strong as to allow for a mediation analysis. This factor may limit the applicability of mediation analysis for future research.

TRANSMISSIONS BETWEEN EO AND PERFORMANCE: CE AS AN ENTREPRENEURIAL PROCESS

Another way to analyze the linking pins between EO and performance is by explicit consideration of the entrepreneurial process. An entrepreneurial process is the temporal sequence of activities from opportunity recognition/opportunity creation through to exploitation (Moroz & Hindle, 2011). Entrepreneurial process models describe the development from the genesis of an idea to the startup of a business, from the idea for a product to its introduction or from the idea to “go international” to actually setting up an international venture.

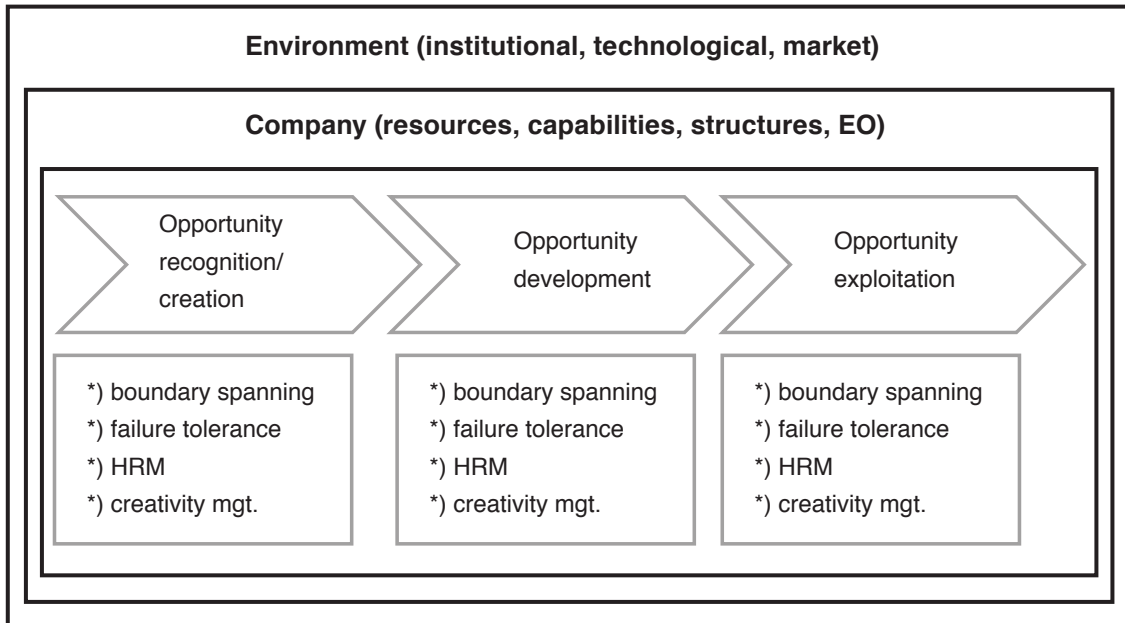
The process perspective on CE has already been introduced to CE research by Burgelman (1983), whose 1983 paper “Corporate Entrepreneurship and Strategic Management: Insights from a Process Study” has become a seminal paper in CE research. Further to this, the mediator analyses in the previous section can be regarded as first steps towards a process model. Process models of strategic entrepreneurship, a topic related to CE, have already been devised (Hitt, et al., 2011).

In describing entrepreneurial processes, Sarasvathy (2001) identifies two distinct approaches: causation and effectuation (C&E). “Causation” has connotations of rational planning, whereas “effectuation” is associated with emergent strategies. Sarasvathy illustrates that the entrepreneurial process impacts on the type of opportunities that are finally exploited: for example, entrepreneurs choosing causation tend to rule out opportunities that do not lend themselves to ex-ante planning. In a similar vein, C&E can impact on international opportunities. This illustrates that decision making processes influence the types of decisions being made and ultimately their effectiveness (Dean & Sharfman, 1996). The analysis of C&E is thus pertinent to entrepreneurial processes in general and to international new venture creation processes (INVCP) in particular.

Effectuation theory has been applied in fields such as management, economics, finance, marketing and international entrepreneurship (Harms and Schiele, 2012). Effectuation theory may be particularly suitable as a building block for corporate entrepreneurship, since CE can also be framed as a problem of decision-making in an uncertain context. The first papers in this direction have come from Brettel et al. (Brettel, Mauer, Engelen, & Küpper, 2011) who analyze effectuation in R&D management, and, as presented at the 1st international CE workshop, the works of DeGeorge et al. (DeGeorge, Fayolle & Randerson, 2011) and Viala and Redien-Collot (2011).

TRANSMISSIONS BETWEEN EO AND PERFORMANCE: TOOLS FOR CE

On a less abstract level, research could analyze which tools companies use to make CE work. Zahra (1995: 227) defines CE as “the sum of an organization’s innovation, renewal and venturing efforts” and this hints at a tools-based perspective on CE. This approach has the advantage that its results would be actionable for practitioners. Research based on this stream would analyze what types of tools are used for successful CE.

Figure 1. An embedded model of the corporate entrepreneurship process

The performance impact of CE tools can be analyzed alone as well as in a more complex framework. Take, for example, the schematic model of CE as an entrepreneurial process (see Figure 1). Here the environment and the company context (including its strategic orientation) provide the framework for the entrepreneurial process (see section 3). Organized throughout along the entrepreneurial process, a number of management tools can be applied for effective opportunity recognition (for example, HRM for selecting and promoting creative employees, boundary spanning for receiving external information, creativity management for the generation of ideas and failure tolerance for effective creativity), opportunity development (slack resources in terms of time and money such as corporate venture capital, power promotion and functional promotion and idea management such as stage-gate type selection processes) and opportunity exploitation (internal or external commercialization).

In this model, it is not EO alone but the complex interplay between environmental and firm-specific contexts, along with a number of management tools, that can be used to develop a business idea from inception to exploitation. A framework for analysis can be based on the ideas of Miller (1983), who advocated the configuration approach in his seminal paper on CE and EO. The configuration approach posits that organizational development is influenced by factors from the domains of the environment, strategy, leadership and structure. The factors from each domain can interact in a complex way, giving rise to a limited number of observable organizational types, each with a dominant domain. For example, Miller (1983) identifies simple firms (leadership dominates), planning firms (structure dominates) and organic firms (environment dominates), in which the dominant domain is a "chief determinant of entrepreneurship" (p. 770). As there

are different types of companies, there may also be different ways to trigger entrepreneurship. Miller writes (1983: 770): “any programs which aim to stimulate entrepreneurship would benefit greatly from tailoring recommendations to the nature of the target firms”. This differentiated perspective holds the promise of creating a fitting match of tools and firm configuration.

While the configuration has delivered promising empirical results (for an overview see Harms, Kraus, & Reschke, 2007) it is methodologically challenging (Dess, Newport & Rasheed, 1993) and has limitations when it comes to the empirical identification of very entrepreneurial firms (Harms, Kraus, & Schwarz, 2009). Nevertheless, future research in this direction should be encouraged. Here, an emphasis on the construct of the “Business Model” as a potential framework for generating new knowledge could potentially be used by practitioners and academics (Lecocq, Demil, & Ventura, 2010).

DISCUSSION AND CONCLUSION

This paper proposed to look at research streams that open the “black box” hovering between EO and performance. First, mediators can illustrate the transmission mechanism between EO and performance. Researchers have analyzed mediators from a variety of theoretical perspectives, and found partial evidence for mediation effects. While numerous avenues for future research are still open, the medium-to-low (albeit persistent) link between EO and performance indicates that there are methodological barriers to this kind of research. Second, research on corporate venturing could emphasize the perspective of the entrepreneurial process, by, for example, drawing on the concepts of causation and effectuation. First attempts show that CE processes can be analyzed through this perspective. Third, research based on a tools-based perspective is certainly actionable for practitioners. This perspective can focus on individual tools as well as on the complex interplay of configuration domains.

This overview is not without limitations, as it represents a subjective perspective on the literature. Where it attempts to be systematic, it may not be complete, as there may be studies that have analyzed direct and indirect effects without using the key word “mediation” and which have thus not been used in the analysis of the literature. Nevertheless, it is hoped that this short discussion of the research streams provides interesting and inspiring inputs for CE researchers who strive to take a look into the “black box” of CE.

To carry out these promising research streams, longitudinal research designs with multiple cross-sections would form one option to capture varying degrees of causation and effectuation over time (Van de Ven & Huber, 1990). In these efforts, attempts towards a configuration perspective that encompasses multiple domains (Harms, et al., 2009) could shed light on the multifaceted nature of CE. It is hoped that further research will outline the process of CE and that new insights will be gained.

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Part III: Corporate Entrepreneurship in Context

2. Corporate Entrepreneurship in Family Businesses: past, present and future research

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CORPORATE ENTREPRENEURSHIP AND FAMILY BUSINESSES

As remarked by Lumpkin, Brigham & Moss, “there has been a surprisingly small amount of research on entrepreneurship in family firms” (2010: 245). Luckily, however, we are in the growth stage of the life cycle of this literature. Only in the last three years, several books were released on the topic (Nordqvist & Zellweger, 2010; Stewart, Lumpkin, & Katz, 2010) and special issues on the topic appeared of *Entrepreneurship and Regional Development* (Nordqvist & Melin, 2010), the *International Journal of Entrepreneurship and Innovation Management* (Sharma, 2011), the *Strategic Entrepreneurship Journal* (Lumpkin, Steier, & Wright, 2011) and *Small Business Economics* (Uhlaner, Kellermanns, Eddleston, & Hoy, 2012).

In the present paper, we focus on firm-level entrepreneurship, better known as “corporate entrepreneurship” (CE). We adopt a wide definition of CE referring both to the firm-level entrepreneurial content (Sharma & Chrisman, 1999) and the firm-level entrepreneurial process (Lumpkin & Dess, 1996; Miller, 1983; Zahra, 1991). The former refers to CE as strategic renewal and as corporate venturing. The latter refers to entrepreneurial orientation and its components: innovativeness, proactiveness, risk-taking, autonomy and competitive aggressiveness. Similarly, we adopt a wide definition of family business. A family business is a company characterized by a considerable involvement of a family, in political, cultural or generational terms (Astrachan, Klein, & Smyrnios, 2002).

Our interest in studying CE in family businesses is rooted in three reflections. First, family businesses make up, worldwide, the largest form of business organization (Faccio & Lang, 2002; Holderness, 2009; Lopez de Silanes, La Porta, & Shleifer, 1999) and consequently make important contributions to job creation, gross national product and wealth generation (Beckhard & Dyer, 1983; Feltham, Feltham, & Barnett, 2005; Kelly, Athanassiou, & Crittenden, 2000; Shanker & Astrachan, 1996).

Second, CE is of vital importance today due to the economic downturn that European and US companies are facing. CE is especially beneficial for firms operating in hostile environmental contexts (Zahra & Covin, 1995). In particular, CE can positively affect firm performance through the accumulation and combination of knowledge-based capital (Kuratko, Ireland, & Hornsby, 2001; Rauch, Wiklund, Lumpkin, & Frese, 2009; Simsek & Heavey, 2011). Scholars agree on the facts that CE can innovate a company’s business model by reducing R&D costs and by incorporating external knowledge (Chanal & Caron-Fasan, 2010; O’ Sullivan, 2005) and that CE constitutes a source of competitive advantage which needs to be considered and protected (Frechet & Martin, 2011). Therefore, firms should devise processes that support and foster innovation (López & García, 1999) and entrepreneurship (Fayolle & Gailly, 2009), two levers that may truly influence the development and growth of economies (Audretsch & Thurik, 2003).

Third, family firms are characterized by distinctive features, i.e. different decision-making processes (Ensley & Pearson, 2005), socio-emotional attachments (Berrone, Cruz, & Gomez-Mejia, 2012), institutional overlaps (Tagiuri & Davis, 1996) and complex relational dynamics (Sharma, Chrisman, & Gersick, 2012), that may drive CE in specific ways.

In the remainder of the manuscript, we review previous studies on CE in family firms, distinguishing between older contributions (past research) and more recent ones (current research). We then sketch possible avenues for future research.

PAST RESEARCH: POSITIVE AND NEGATIVE VIEWS

Within the past literature on CE in family firms, scholars have adopted either a negative or a positive perspective.

The traditional perspective is the negative one: to use a metaphor, we could say that according to this view, the family is the ballast that impedes the balloon of CE from properly flying. This view is rooted in the agency theory and has been supported by some empirical studies. According to such a perspective, family firms are less likely to engage in entrepreneurial risk-taking behaviors because of the overlap between ownership and management (Naldi, Nordqvist, Sjöberg, & Wiklund, 2007). Family owner-managers tend not to risk the family's wealth lest they jeopardize the financial and social well-being of future generations. A recent content analysis run by Short, Payne, Brigham, Lumpkin and Broberg (2009) on the S&P 500s' letters to the shareholders also reveals that family firms are less prone to communicating their entrepreneurial behavior, at least in terms of autonomy, proactiveness and risk taking.

On the other side, some scholars claim family firms present a unique and favorable setting for entrepreneurship (Aldrich & Cliff, 2003). This positive perspective asserts that the family instead acts like "oxygen that feeds the fire of entrepreneurship" (Rogoff & Heck, 2003: 559). According to Salvato (2004) and Zahra, Hayton and Salvato (2004: 363), it is the long-term nature of family firms' ownership that "allows them to dedicate the resources required for innovation and risk taking, thereby fostering entrepreneurship". Firms characterized by an external, decentralized and long term oriented culture are also characterized by higher levels of CE. Given that this kind of culture is typically present when a family is involved in the ownership of the firm, it can be stated that family firms are more inclined to CE. Zahra (2005) and Kellermanns, Eddleston, Barnett and Pearson (2008) also argue that the number of generations involved in the management of a firm positively influences CE because of an increased knowledge heterogeneity. According to Salvato (2004) this effect is particularly strong in founder-centered firms and, as Kellermanns and Eddleston (2006) add, such a relationship is positively moderated by the use of formal strategic planning techniques. To put it briefly, according to the promoters of this positive view, both family ownership and family management are beneficial for developing CE.

Both the positive and the negative perspectives are still alive in recent publications that adopt a cognitive approach to CE. On the positive side of the debate, in a theoretical paper by Patel and Fiet (2011) commented and extended by Sharma and Salvato (2011), it is argued that family firms are better positioned to discover entrepreneurial opportunities, both in static and

dynamic environments, than non-family firms. Family firms' peculiar conditions give them distinctive advantages in opportunity identification are abundant. These conditions include elements such as family relationships, noneconomic aspirations, low turnover, long leader tenures, prevailing socio-cognitive familial bonds and long term orientation. More negatively, Hayton, Chandler and DeTienne (2011) argue in an empirical paper that family firms are less likely to engage in opportunity identification processes that are impulsive, spontaneous and creative. As a consequence, the new opportunities identified by family businesses are less innovative than those identified by non-family firms.

In conclusion, if we look at the past literature, two competing views on CE in family firms characterized the academic debate.

PRESENT RESEARCH: MORE ARTICULATED VIEWS THAT MATCH POSITIVE AND NEGATIVE ASPECTS

Some more complex approaches have recently started to appear. They are characterized by the capability to overcome the dichotomy between the negative and the positive views of past research. In other words, they find a way to combine positive and negative effects in the same model.

A first approach in this style was developed by Gomez-Mejia, Haynes, Núñez-Nickel, Jacobson and Moyano-Fuentes (2007) according to which family firms can either be risk-takers or risk-adverse, depending on the possibilities of preserving their families' socio-emotional wealth. Social-emotional wealth refers to all non-financial aspects of the firm that meet affective needs, for example, a sense of identity, the ability to exercise influence and the perpetuation of the family dynasty. In other words, the authors argue that emotions are the true point of reference for family firms' entrepreneurial behavior.

A second approach consists of separating the different dimensions of entrepreneurial orientation to understand if some of them are positively affected by the presence of the family and some other are negatively influenced. Lumpkin, Brigham and Moss (2010), for example, argue that family firms are characterized by a long term orientation that, in turn, is able to increase innovativeness, proactiveness and autonomy and, at the same time, may decrease risk taking and competitive aggressiveness.

Building on this approach, Zellweger and Sieger (2012) not only separate the different dimensions of entrepreneurial orientation but also extend them and introduce a dynamic perspective to approaching CE in family firms. They separate autonomy into external autonomy (i.e. autonomy from external stakeholders) and internal autonomy (i.e. empowering people) and argue that the former is generally speaking high while the latter increases as the generations go on. Innovativeness is not always high but increases with generational changes. Risk taking is extended into performance hazard risk, control risk (i.e. debt/equity ratio) and ownership risk (i.e. undiversified assets). The authors then argue that the first and second types of risk are generally low in family firms, while the third one is generally high. Proactiveness can be high or low, depending respectively on the presence or absence of non-active owners. Competitive aggressiveness starts at high levels but generally decreases over time due to reputation concerns (Zellweger & Sieger, 2012).

Cruz and Nordqvist (2012) propose a generational perspective on CE and contribute to this research stream by arguing that opening management teams to

non-family managers makes a positive difference for entrepreneurial orientation, albeit only in firms that have been in a family for three or more generations. Similarly, the significance of non-family investors on entrepreneurial orientation is particularly strong in firms of the third generation and beyond.

This approach is in line with Miller and Le Breton Miller (2011), according to whom the social context of ownership can shape owner identities and their entrepreneurial preferences. Hence different types of ownership (for example, lone founder, post-founder family, and founder family) induce different levels of entrepreneurial orientation. The scholars used identity theory to argue that lone founder owners and CEOs will embrace entrepreneurial identities and consequently their firms display high levels of entrepreneurship. Meanwhile, post-founder family firms, because of the ties to family in their businesses, tend to assume identities as family nurturers that limit entrepreneurship. Finally, family firm founders exhibit combined identities and run companies that reveal intermediate levels of entrepreneurship.

The fifth current approach to CE in family firms has been developed by Zahra (2012) and is learning-based. Zahra argues that CE is enhanced by the depth, speed and breadth of learning, but that not all of these features are increased by the presence of the family. Family ownership has a negative impact on the depth of learning and a positive effect on both its speed and breadth. The latter is also positively moderated by family cohesiveness.

In addition to the above, some scholars have started to study the effects of the family on the effectiveness of CE, i.e. on the relationship between CE and performance. More precisely, Casillas and Moreno (2010) and Casillas, Moreno and Barbero (2010) have explored the effect of the family on the relationship between the three main dimensions of entrepreneurial orientation and growth. They found that the generation in charge has a negative moderating effect on the relationship between risk taking and growth but a positive one on the relationships between proactiveness and growth and between innovativeness and growth. Even when analyzing the effectiveness of CE, the family presence appears to be beneficial or detrimental on the basis of the entrepreneurial dimension being referred to.

Chirico, Sirmon, Sciascia and Mazzola (2011) suggest that realizing the benefits of firm-level entrepreneurship in family firms is a complicated matter affected by the synchronization of entrepreneurial orientation, generational involvement and participative strategy. Entrepreneurial orientation provides the mobilizing vision to use the heterogeneous yet complementary knowledge and experiences offered by increased generational involvement to support entrepreneurship. However, without a coordinating mechanism, generational involvement leads to conflict and negative outcomes. When, instead, it is also coordinated via a participative strategy, performance gains are achieved.

The last line of current research we identified focuses on corporate venturing (the only case in which CE is conceived in terms of content). Marchisio, Mazzola, Sciascia, Miles and Astrachan (2010) argue that corporate venturing has positive and negative effects, both at the individual and the collective level. On the one hand, corporate venturing activities can be a useful tool to better select and develop the successor, as well as to increase the next generation's human capital. On the other hand, corporate venturing can also have negative effects: it can decrease the affective commitment of the next generation if the new venture is strategically distinct from the parent company. It can also reduce

family cohesion if the financial impact of corporate venturing is high and there are several non-active family owners (that are usually risk adverse and more interested in dividends than investments).

In this last research stream, we can include a paper by Sieger, Zellweger, Nason and Clinton (2011) who studied the process through which family firms simultaneously own and engage in various entrepreneurial interests (portfolio entrepreneurship). They analyzed four in-depth, longitudinal family firm case studies to develop a resource-based process model of portfolio entrepreneurship in family firms. Six distinct resource categories were identified as relevant in the portfolio entrepreneurship process: industry-specific social capital and reputation (which had constant relevance over time), industry-specific human capital (which had increasing relevance at later stages of the process), meta-industry human capital, social capital and reputation (which also had increasing relevance at later stages of the process).

FUTURE RESEARCH: OUR EXPECTED EFFORTS

Future research on CE in family firms is surely required to build on current studies by exploring the different dimensions of EO, developing the generational perspective, studying the complex dynamics of knowledge and learning, understanding the effectiveness of EO and investigating the processes of corporate venturing. Interestingly, many of the papers presented at the 1st CE workshop fit into these categories: we consequently believe that presenters are on the right tracks.

In addition, new trajectories for future research can be traced.

- A first subject that could be explored is strategic renewal in family firms. After the seminal paper of Hall, Melin and Nordqvist (2001), the topic remained surprisingly unexplored. In these difficult days many family firms are required to engage in strategic renewal processes to survive. This research avenue thus appears to be extremely relevant.
- International CE represents another unexplored topic of family business literature. With the exception of Sciascia, Mazzola, Astrachan and Pieper (2012), family business literature has not conceived internationalization as an entrepreneurial act resulting from the management team capability to identify and exploit entrepreneurial opportunities.
- Another line of research could consist of the investigation of non-linear relationships between any kind of family involvement (in political, generational and cultural terms) and CE. For example, it would be of great interest to establish whether the relationship between family ownership or family management and CE is inverted-U shaped, as this would mean that intermediate levels of family involvement maximize CE, just as in the case of financial performance (Mazzola, Sciascia & Kellermanns, forthcoming).
- A fourth fruitful line of research could be the building of configurational models of CE rather than relying on the currently dominant use of contingency models to investigate the relationship between family involvement and CE. It is very likely that more complex combinations of factors (family-related, resource-related and environment-related)

are able to unlock the potential of families for CE.

- Given scholars' great interest in the process of strategic entrepreneurship (i.e. the orchestrating of resources to concurrently explore future business domains and exploit the current ones), another interesting research avenue would be the exploration of it's the role of this in family firms. Webb, Ketchen and Ireland (2010) have already tried to sketch propositions on how the specific dimensions of family firms affect this process. Much more could be done in this respect.
- Recent studies have started to tackle the nature of entrepreneurial conduct across different generations and to deal with the changing need for entrepreneurship behaviors over the life cycles of family firms. This concept of «Transgenerational Entrepreneurship» (Nordqvist and Zellweger, 2010) could be a fruitful line of further enquiry as it might reveal how CE could be successfully transferred from one generation to the next.
- There is a huge amount of literature on succession in family business (Cabrera-Suarez, De Saa-Perez & Garcia-Almeida, 2001). We argue that another promising area of investigation would be related to the relationship between succession and CE. How could succession work as a tool to develop CE in family firms? What types of succession styles might favor the development of CE? Answering these research questions could strongly contribute to the literature on family business entrepreneurship.
- Last, but not least, the literature has mainly looked at how the family influences entrepreneurial activity. The reverse relationship deserves equal investigation (i.e. the effects of CE on the family) in order to "put the family into family business research" (Dyer & Dyer, 2009). Such a suggestion is in line with recent calls for adopting the family as unit of analysis in entrepreneurship research (Zellweger, Nason, & Nordqvist, 2011).

In conclusion, we feel that much work is still to be done in the field and we hope our work will provide some valuable ideas on how to grow our understanding of CE in family business.

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