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**Entrepreneurship Capital:
A Regional, Organizational, Team, and
Individual Phenomenon**

by

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ABSTRACT

We review the role entrepreneurship capital in regional economic performance and extend it to explain the economic and entrepreneurial performance of organizations, teams, and individuals. Drawing on entrepreneurship and social capital research, we demonstrate that researchers at different level of analysis are in fact modeling the same underlying multi-level concept: entrepreneurship capital. We identify elements of entrepreneurship capital at and across the levels. Where there are gaps, we suggest new directions for research, public policy, and management practice that focus on enhancing organizational, interpersonal, and personal factors which promote entrepreneurial action at and across regional, organizational, team, and individual levels.

Keywords: Entrepreneurship, Social Capital, Multilevel

CONTENTS

Abstract.....	1
Contents	2
Introduction.....	3
From Entrepreneurship to Economic and Firm Growth	4
Economic Entrepreneurship Capital	7
Economic Region.....	8
Industry	9
Organizational Entrepreneurship Capital.....	10
Firm Level – Commercial Organizations	11
Firm Level – Public Organizations (Labs & Universities)	14
Personal Entrepreneurship Capital.....	15
Team Level	16
Founder & Leader.....	18
Middle-Managers and Employees	19
Integrating the Levels of Analysis	21
Multi-Level Approach	21
New directions for research, public policy, and management practice	25
References.....	27

INTRODUCTION

In the fields of economics and management, five types of capital have been identified as drivers of economic growth: physical capital, human capital, knowledge capital, social capital, and most recently entrepreneurship capital. In this chapter, we define entrepreneurship capital as a subset of social capital and refers to those social and relational factors, forces, and processes which promote or hinder the interaction of various economic agents and their ability to employ, integrate, and exploit physical, human, and knowledge capital for entrepreneurial ends.

This chapter first revisits the concept of entrepreneurship capital as an important factor for regional economic performance and then extends this concept to explain the economic and entrepreneurial performance of organizations, teams, and individuals, or in other words the economic and entrepreneurial performance of a region's or firm's *human resources*.

- At the regional and industry levels, we define entrepreneurship capital as those factors related to social capital which influence and shape the capacity of a region or industry to generate entrepreneurial activity.
- At the firm level, we define entrepreneurship capital as those organizational factors related to social capital which influence and shape an organization in such a way to be more conducive to the creation of new entrepreneurial business units (e.g. external ventures, joint ventures, or internal ventures).
- At the team level, we define entrepreneurship capital as those interpersonal factors related to social capital which influence and shape a team in such a way to be more conducive to the enactment of entrepreneurial behaviors by individual managers and employees.

- At the individual level, we define entrepreneurship capital as those personal factors related to social capital which influence and shape an individual cognitions and actions of entrepreneurs, managers, and employees in such a way to be more conducive to the discovery and creation of entrepreneurial opportunities and the active pursuit of entrepreneurial opportunities.

Drawing on existing entrepreneurship and social capital research at and across these four levels of analysis, we demonstrate our proposition that researchers at various level of analysis are in fact modeling the same underlying concept: entrepreneurship capital. In our review, we identify the specific elements of entrepreneurship capital at each level and corresponding independent and dependent variables. Where there are gaps in the existing literature, we suggest perspectives and approaches that researchers could use to fill those gaps.

Thus, this paper suggests a new direction for research, public policy, and management practice that focuses not only on enhancing the human capital of a region's or a company's labor force, but also those additional organizational, interpersonal, and personal factors of entrepreneurship capital which promote entrepreneurial action at the firm, team, and individual level. Further, given that entrepreneurship is inherently a multi-level phenomenon, we discuss why it is important for researchers to investigate entrepreneurship capital at multiple levels and why it is important to for practitioners and policy makers to coordinate and align efforts to promote entrepreneurship capital at the individual, team, organizational and regional levels.

FROM ENTREPRENEURSHIP TO ECONOMIC AND FIRM GROWTH

Over the past two decades, a number of researchers have developed theory and produced evidence to link entrepreneurship, also known as innovation and technological change, to economic growth (Aghion & Howitt, 1992; Carree, Van Stel, Thurk, & Wennekers, 2002;

Romer, 1986; Wennekers & Thurik, 1999). As the quality of the data and the analyses improves, for example through the Global Entrepreneurship Monitor study (see Minniti, Bygrave, & Autio, 2005; Reynolds et al., 2005), it has become possible to draw more nuanced conclusions regarding this generally positive yet complex relationship (Acs & Varga, 2005). For example, it has been demonstrated that the internal motivation for entrepreneurship (e.g. necessity vs. opportunity driven; no-growth vs. high-growth firms), and the external business environment (e.g. less vs. more economically developed; geographic/cluster effects) play a substantial the relationship between entrepreneurship and economic growth (Minniti et al., 2005; Rocha & Sternberg, 2005; van Stel, Carree, & Thurik, 2005; Wennekers, van Wennekers, Thurik, & Reynolds, 2005; Wong, Ho, & Autio, 2005).

In this article, we begin by discussing those aspects of social capital at the economy-level which influence and shape economic actors and create an environment that is more conducive to the creation of new firms, more specifically known as *entrepreneurship capital* (Audretsch & Keilbach, 2004a). Our definition of social capital is similar to that of Adler and Kwon (2002) who define social capital as “the goodwill available to individual’s or groups. Its source lies in the structure and content of the actor's social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor” (2002).

While our definition of social capital is certainly not the only one, it is in line with the mainstream of strategic management and entrepreneurship research. For example, our definition is also consistent with both Nahapiet & Ghoshal (1998) and Leana & Van Buren III (1999), who respectively state that social capital “comprises both the network and the assets that may be mobilized through that network” (Nahapiet et al., 1998) and is “a resource reflecting the character of social relations within the firm ... which create value by facilitating successful

collective action” (Leana et al., 1999). Further, our definition admits both the positive and negative aspects of social capital. On the one hand, social capital both increases individual commitment, flexibility, (Leana et al., 1999); the efficiency of individual and collective action (Leana et al., 1999; Nahapiet et al., 1998); and contributes to adaptive efficiency, creativity, and learning (Nahapiet et al., 1998). On the other hand, there are aspects of social capital that can detract from entrepreneurial effectiveness and success (cf. Coleman, 1990; Leana et al., 1999; Nahapiet et al., 1998).

Following this line of reasoning, we incorporate related ideas and findings in the research literature to extend this concept down to firm and lastly to the team and individual levels. For example, as summarized by Sternberg and Wenneckers (2005) in the introduction to a recent special issue in *Small Business Economics*, there is precedent for research into the determinants and the effects of entrepreneurial activity at not only the macro/country level, but also on the regional level as well as the micro/individual level. Davidsson & Wiklund (2001) provide a more fine-grained review of the literature, likewise reporting on research at the micro (individual, team and firm) and macro/aggregate (industry, region) levels of analysis. Thornton (1999) provides a related literature from the sociological viewpoint, highlighting supply and demand-side perspectives on entrepreneurship research. A more formal model of the conditions for, the crucial elements of, and the impact of entrepreneurship was proposed several years earlier by Wenneckers & Thurik (1999, see Figure 4, p. 51). What they propose as conditions for entrepreneurship for the individual, firm, and macro levels, we view as important aspects of *entrepreneurship capital*. In this review of the literature we build on their basic typology and define *entrepreneurship capital* at the economic (region and industry), organizational, and personal (team and individual) levels of analysis as follows:

Economic Entrepreneurship Capital is defined as those social and relational factors related to social capital which promote entrepreneurship in an economic region or industry, consisting of multiple firms, markets, and other economic actors. Following Wennekers & Thurik (1999), these include cultural and institutional conditions as well as elements of variety, competition, and selection.

Organizational Entrepreneurship Capital is defined as those social and relational factors related to social capital which promote entrepreneurial activity within a single firm or a single unit of the firm, consisted of multiple individuals, teams, and other corporate actors. Following Wennekers & Thurik (1999), these include conditions regarding business culture and incentives and elements regarding start-ups, entry into new markets, and innovations.

Personal Entrepreneurship Capital is defined as those social and relational factors related to social capital which promote entrepreneurial behavior within a single individual, either firm founders, mid-level managers, or their employees. Given that is often a team of entrepreneurs and not an individual entrepreneur that founds a firm, we includes entrepreneurial teams under this label. Following Wennekers & Thurik (1999), these include conditions pertaining to psychological endowments and elements of individual attitudes, skills, and actions.

ECONOMIC ENTREPRENEURSHIP CAPITAL

We define *economic entrepreneurship capital* as those social and relational factors related to social capital which promote entrepreneurship in an economic region or industry, consisting of multiple firms, markets, and other economic actors. Following Wennekers & Thurik (1999), these include cultural and institutional conditions as well as elements of variety, competition, and selection. In the following two sections we review the relevant research at the level of analysis of the economic region and the industry.

Economic Region

The formal concept of entrepreneurship capital was first introduced at the economic-level of analysis (Audretsch et al., 2004a; Audretsch & Keilbach, 2004b, c, 2005a). In its original form, entrepreneurship capital is defined as a subset of social capital which promotes entrepreneurial activity, and includes legal, institutional and social factors (Audretsch et al., 2004a). For an excellent review of social capital as it applies to entrepreneurship, as well as a discussion of how social capital (e.g. social structures, networks and memberships) relates to human capital (e.g. tacit and explicit knowledge), we refer the reader to Davidsson & Honig (2003).

There are a number of different ways, both indirect and direct, to measure entrepreneurship capital in an economic region, direct and indirect as well as objective and perceptual (cf. Arenius & Minniti, 2005). One indirect but key indicator is the number of start-ups per capita (Audretsch et al., 2004a). Narrower definitions of type of start-up, for example high-technology manufacturing or hardware and software businesses in the information technology sector, may more accurately reflect the risky nature of entrepreneurial start-ups (Audretsch et al., 2004a). More direct measures would characterize the institutions, policies, demographic characteristics, as well as historical, social, and cultural traditions (Audretsch et al., 2004a). Alternate measures of a pro-entrepreneurship social capital that have been proposed and empirically tested, with mixed success, are parental self-employment and entrepreneurship rates (Davidsson et al., 2003; Kim, Aldrich, & Keister, 2006; Mueller, 2006a), the level of entrepreneurial activity of household members (Mueller, 2006a), as well as start-up rates among close friends and neighbors and membership in business networks (Davidsson et al., 2003).

Several economic models of increasing complexity have been developed and empirically tested which demonstrate: 1) that entrepreneurship capital contributes to economic output, over and above traditional forms of capital (e.g. physical, labor, and knowledge)(Audretsch et al., 2004a); 2) in particular, the impact of entrepreneurship capital is three to four times that of knowledge capital (Audretsch et al., 2004a); 3) high-technology entrepreneurship capital impacts labor productivity growth (Audretsch et al., 2004b); and 4) R&D intensive entrepreneurship capital has a greater long-term impact on long-term regional productivity, especially in urban vs. rural regions (Audretsch et al., 2005a). In terms of theory, three mechanisms have been proposed to explain the positive impact of entrepreneurship capital on economic growth: knowledge spillovers, increased competition among the increased number of enterprises, and increased diversity among firms (Audretsch et al., 2004c).

Another example of a specific important component of entrepreneurship/social capital in regions is social networks. Studies of particular note in this area have been recently published by Cantner & Graf (2006) for Jena, Germany, by Neck et al. (2004) for Boulder County, Colorado, by Lawson & Lorenz (1999) and Keeble et al (1999) for Cambridge, England, and by Casper & Murray (2005) for both Cambridge, England, and Munich, Germany.

Industry

The next logical extension of the concept of entrepreneurship capital would be to look at specific industries within specific economic regions or across multiple economic regions. While there are industry-level studies that address this for social capital and networks in general (cf. Podolny, Stuart, & Hannan, 1996; Stuart & Sorenson, 2003a, b), we found only one conceptual paper that explicitly specifically addresses entrepreneurship capital at the industry level of analysis. Building on related industry-level entrepreneurship and institutional research (Aldrich

& Fiol, 1994; Rao, 1994; see also Rao, 2004), Lounsbury & Glynn (2001) propose that stories can be used to promote legitimacy, create competitive advantage, and build industry-level institutional capital. In their model, entrepreneurial stories produce entrepreneurial identity and legitimacy, which leads to the acquisition of resource and institutional capital, which enables wealth creation and a new round of entrepreneurial stories (Lounsbury et al., 2001).

The concept of industry stories parallels the concepts of historical, social, and cultural traditions at the economic level of analysis, and most likely presents similar data-collection difficulties (cf. Audretsch et al., 2004a). A proxy, such as the number of new venture start-ups within an industry, with a potential focus of high-technology start-ups within an industry (cf. Audretsch et al., 2004a), may be a more readily and publicly available measure. This should not, however, discourage researchers from a richer, more qualitative industry-level analysis of start-up activity (e.g., Christensen, 2000; Klepper, 2001, 2002; Klepper & Sleeper, 2005; Rao, 2004). In particular, the importance of interfirm networks should not be ignored (Johannisson, 1998, 2000; Johannisson, Ramírez-Pasillas, & Karlsson, 2002).

ORGANIZATIONAL ENTREPRENEURSHIP CAPITAL

We now proceed from considering a population of organizations in an economic region or industry to considering a population of individuals in organizational context. At this new level we define *organizational entrepreneurship capital* as those social and relational factors related to social capital which promote entrepreneurial activity within a single firm or a single unit of the firm, consisted of multiple individuals, teams, and other corporate actors. Following Wennekers & Thurik (1999), these include conditions regarding business culture and incentives and elements regarding start-ups, entry into new markets, and innovations. While we primarily

address research on private and for-profit organizations, we do briefly address an emerging literature on entrepreneurial public and non-for-profit organizations.

Firm Level – Commercial Organizations

We will begin this section of the chapter by reviewing the social capital aspects of the current literature on entrepreneurial strategy, culture, and the resulting firm-level performance implications. Following this introduction to the firm level of analysis, we will broaden the scope of our review to other more general works on entrepreneurship and social capital at the firm level.

To categorize the current literature on entrepreneurial strategy and culture, we were inspired by a framework from Chung & Gibbons (1997) that, building on an earlier cultural framework from Fombrun (1986), focus on two aspects of organizational culture: the superstructure and the socio-structure. Whereas the superstructure includes the core beliefs, values, and dominant assumptions of the organization, i.e. its ideology, the socio-structure includes learning, information exchange, norms, and sanctions, i.e. social capital. They propose that these two aspects, along with human capital, play an influential role in corporate entrepreneurship (Chung et al., 1997). Applying this framework to current measures of entrepreneurial strategy and culture, *entrepreneurial orientation* (EO), *entrepreneurial management* (EM), and the *corporate entrepreneurship activity index* (CEAI), we find ideology and not social-capital has been the central focus research to date.

The oldest and most widely adopted measure of entrepreneurial strategy and culture is *entrepreneurial orientation* (EO). Building on earlier work by Khandwalla (1977) and Kets de Vries (1977), Miller (1983) defined a firm as being entrepreneurial when it behaves in a risk-taking, innovative, and proactive manner. The most widely used catalog of questionnaire items

used to empirically measure EO (Kreiser, Marino, & Weaver, 2002; Lyon, Lumpkin, & Dess, 2000) was published by Covin & Slevin (1989; 1991) and later expanded upon by Lumpkin & Dess (1996; 2001) (see also Lumpkin, 1998). Cross-cultural validity of the multi-factor EO scale was demonstrated by Knight (1997), Antoncic & Hisrich (2001), and Kreiser, Marino, & Weaver (2002).

While it has been demonstrated across a number of studies that higher levels of EO generally result in higher levels of firm performance (Rauch, Wiklund, Frese, & Lumpkin, 2004), a number of internal and external contingency factors have been identified which can moderate the relationship between EO and different measures of firm performance (Antoncic & Hisrich, 2004; Covin, Green, & Slevin, 2006; Dess, Lumpkin, & Covin, 1997; Lumpkin et al., 2001; Wiklund & Shepherd, 2005). In fact, it has been proposed that EO moderates the relationship between knowledge resources and firm performance (Wiklund & Shepherd, 2003), which would suggest that EO may in fact be more closely related to human capital than social capital.

Less widely used but nonetheless well-established measures of entrepreneurial strategy and culture are *entrepreneurial management (EM)* and the *corporate entrepreneurship activity index (CEAI)*. *Entrepreneurial management (EM)*, a newer concept proposed by Stevenson & Jarillo (1990) and later empirically measured by Brown, Davidsson, & Wiklund (2001), encompasses six factors: strategic orientation, resource orientation, management structure, reward philosophy, growth orientation, and entrepreneurial culture. The *corporate entrepreneurship activity index (CEAI)* has been developed over the 20 years (Hornsby, Naffziger, Kuratko, & Montagno, 1993; Kuratko, Montagno, & Hornsby, 1990) and in its current form addresses five organizational factors: management support, work discretion,

rewards/reinforcement, time availability, and organizational boundaries (Hornsby, Kuratko, & Montagno, 1999; Hornsby, Kuratko, & Zahra, 2002).

Following the framework of framework from Chung & Gibbons (1997), close examination of the questionnaire items use to measure EO, EM, and CEAI reveals that while they measure many aspects of a firm's entrepreneurial *ideology*, as reflected in the conditions proposed by Wennekers & Thurik (1999) (e.g. conditions regarding business culture and incentives and elements regarding start-ups, entry into new markets, and innovations), they do not explicitly address issues of *social capital*. While later extensions of EO do introduce the concepts of autonomy (Lumpkin et al., 1996; Monsen & Boss, 2004) and teamwork (Monsen, 2005), which are related to social capital, one needs to examine other measures of entrepreneurial strategy and culture to find more explicit references to social capital,

With this key finding in mind we pose the question, how can social capital be better integrated into empirical research into entrepreneurial strategy and culture? In the more general literature on organizations, one on the more established social capital frameworks was published by Nahapiet & Ghoshal (1998). In their framework they propose that three basic dimensions of social capital: structural (network ties, network configuration, and appropriable organization), cognitive (shared codes, language, and narratives), and relational (trust, norms, obligations, and identification). Further, they propose four mechanisms (access, anticipation, motivation, and capability) that can lead to the creation of new intellectual capital (see Figure 1 on page 251 in Nahapiet et al., 1998). Confirmatory empirical evidence to support this model is provided by Tsai & Ghoshal (1998). Extending their model and linking the dimensions and mechanisms to our conception of entrepreneurship capital, we propose that this new intellectual capital can in turn be exploited for innovation and entrepreneurship.

We encourage fellow entrepreneurship researchers to pursue theoretical and empirical work in this area. A significant amount of foundational work has been conducted in the innovation and entrepreneurship literatures in the area of strategic alliances (Cooper, 2002; Dickson, Weaver, & Hoy, 2006; Eisenhardt & Schoonhoven, 1996; Weaver & Dickson, 1998) and inter-firm social networks (Cooper, 2002; Greve & Salaff, 2001; Hagedoorn & Roijakkers, 2002; Johannisson, 2000; Johannisson et al., 2002; Lechner & Dowling, 2003; Lechner, Dowling, & Welp, 2006). There are a number of additional starting points from which one can draw inspiration, including the research on stories and narratives (Lounsbury et al., 2001) as well as on the results from related exploratory empirical studies, highlighted in a review article by Davidsson & Honig (2003).

Firm Level – Public Organizations (Labs & Universities)

It should be noted that while social capital is typically addressed in the context of private and for-profit organizations, there is an emerging literature specializing on the technology transfer and commercialization out of public and non-for-profit universities and research institutions, in which social capital plays an important role. The study of academic entrepreneurship and its impact on firms, industries, and economic regions have been the subject of many studies over the past decade (Mansfield, 1998; Mowery, Nelson, Sampat, & Ziedonis, 2004; O'Shea, Allen, O'Gorman, & Roche, 2004; Shane, 2004; Thursby & Thursby, 2002). Beyond more traditional measures of human capital (Audretsch, Lehmann, & Warning, 2005b; O'Shea, Allen, Chevalier, & Roche, 2005), in this chapter we are interested in the human and social mechanisms which enable technology transfer and commercialization and promote firm and regional growth.

One such mechanism that has been receiving increasing attention in the literature are knowledge flows and spillovers, which can involve the direct transfer of knowledge and personnel from universities and research centers to firms (Audretsch & Lehmann, 2004d, 2006; Audretsch et al., 2005b; Autio, Hameri, & Vuola, 2004; Mueller, 2006b; Rothaermel & Thursby, 2005). More concretely, one recent study found that active inventor engagement in technology transfer projects can substantially increase chances of commercialization and follow-on royalties (Agrawal, 2006).

In summary, while one can read between the lines of these research results and see potential role of social capital in the technology transfer and commercialization process, its explicit role has yet to appear in the publication. Thus we urge researchers to more explicitly pursue this line of research, and thus help to empirically identify those aspects of *organizational entrepreneurship capital* that have the most positive impact for public organizations, which need not be the same as for commercial organizations.

PERSONAL ENTREPRENEURSHIP CAPITAL

Finally, we define *personal entrepreneurship capital* as those social and relational factors related to social capital which promote entrepreneurial behavior within a single individual, either firm founders, mid-level managers, or their employees. Given that is often a team of entrepreneurs and not an individual entrepreneur that founds a firm, we include entrepreneurial teams under this label. Following Wennekers & Thurik (1999), these include conditions pertaining to psychological endowments and elements of individual attitudes, skills, and actions. After discussing the literature on entrepreneurial teams and firm founders, we proceed to discuss research into the managers and employees who actually do the work in entrepreneurial firms.

Team Level

Given that many firms are founded by teams instead of individual entrepreneurs, it is important to understand the social interactions of the team members that can often determine the success or failure of the new venture (cf. Ensley, Carland, Carland, & Banks, 1999; Lechler, 2001). This is a area of research that has great promise, as the number of studies in this area is relatively small when compared to economic/industry-level, firm-level, and individual-level studies (Davidsson et al., 2001). For a review of the foundational literature in this area we refer the reader to Birley & Stockley (2000).

Research into the top management teams of ventures have identified team cohesion, team potency, task conflict, and shared strategic consensus as playing a central role in new venture performance (Ensley & Hmieleski, 2005; Ensley, Pearson, & Pearce, 2003; Ensley & Pearson, 2005). While these factors are implicitly related to strong internal social capital, the authors rely on top management team theory (Hambrick & Mason, 1984), leaving it up to future researchers to draw the explicit connections and examine the actual mechanisms that drive these relationships. The importance for making these connections explicit is highlighted in an exploratory study of eight real-world entrepreneurial teams, in which “social networks were most often mentioned as sources of venture capital and/or business partners” (Ensley et al., 1999).

Is there empirical evidence and corresponding theory to back back-up this claim? In fact, it has been demonstrated in independent studies that a balance between individualistic/autonomous behavior and collectivistic/team behavior is necessary to maximize entrepreneurial performance (Monsen, 2005; Morris, Avila, & Allen, 1993; Morris, Davis, & Allen, 1994). Voluntary knowledge transfer amongst team members, in part driven by positive social identification, and consequent organizational learning has been proposed as the

mechanism which makes this possible (Dutta & Crossan, 2005; Monsen, 2005). It could also be argued that such a balanced social context not only produces learning and innovations, but could also be a good climate for the emergence and growth of social capital within the work group as well as with other external groups and actors. It should be noted that Dickson & Weaver (1997) examined interaction of the individualism/collectivism dimension with uncertainty and entrepreneurial orientation, however, their outcome variable was alliance use/non-use and they do not report testing the u-shaped curve hypothesis for individualism/collectivism.

While the studies just mentioned do not explicitly draw on social capital theory, more recent research does. For example, it has demonstrated that an entrepreneurial team's initial external social capital (e.g. external network density) and growth internal social capital over time (e.g. emotional closeness) can improve team performance (Weisz, Vassolo, & Cooper, 2004). In addition, reflecting the idea that not all forms of social capital can be classified as entrepreneurship capital, Hansen, Podolny, & Pfeffer (2001) demonstrated that social capital (i.e. non-redundant, strong external ties) that accelerated product development teams engaged in exploration tasks was in fact a hindrance for teams pursuing exploitation tasks.

Research into team evolution and development suggest that time will be an important dimension to consider, and we expect that different aspects of social capital will be more or less supportive of entrepreneurial activities, depending on the new venture team's stage of development (cf. Boeker & Wiltbank, 2005; Vanaelst et al., 2006). In addition, the entry and exit of team members (Ucbasaran, Lockett, Wright, & Westhead, 2003), and in particular new member identification and selection processes (Forbes, Borchert, Zellmer-Bruhn, & Sapienza, 2006), can play a concrete role in the growth (or decline) of a new venture team's social networks and social capital.

Of course, there are measurement considerations which make this line of research a challenging task. One example of this is presented by Delmar & Shane (2006) in a study of founding teams and firm survival. In this study they examine the relationship between start-up experience, industry experience, and new venture survival. In developing their hypotheses, they argue that previous experience results in both corresponding knowledge (human capital) and networks (social capital) that can aid in firm survival (Delmar et al., 2006). Therefore, we caution researchers to be precise in their theoretical specifications and corresponding selection of indicator variables.

Founder & Leader

While there is still substantial debate about what makes and motivates an entrepreneur (Baum & Locke, 2004; Blanchflower & Oswald, 1998; Shane, Locke, & Collins, 2003), there is a significant body of literature about the individual founders and leaders of entrepreneurial ventures, what they have, and what they do to build, maintain, and grow their *personal entrepreneurship capital*. For example, habitual entrepreneurs with an entrepreneurial mindset “engage the energies of everyone”, “involve many people - both inside and outside the organization”, “create and sustain networks of relationships”, and make “the most of the intellectual and other resources people have to offer” while “helping those people to achieve their goals as well” (McGrath & MacMillan, 2000). Building on this conception, entrepreneurial leadership has been quite relevantly defined as “leadership that creates visionary scenarios that are used to assemble and mobilize a ‘supporting cast’ of participants who become committed by the vision to the discovery and exploitation of strategic value creation” (Gupta, MacMillan, & Surie, 2004). The creation of visions and stories is just as important at the firm level as at the industry level to bring legitimacy to a new business (Lounsbury et al., 2001).

If entrepreneurial leaders are able to follow through with these actions and engage (and grow) their social capital and professional network contacts in order to gather the information they need to do business in a competent manner, research suggests this will lead to greater performance for their firm (Baron & Markman, 2003; Bosma, van Praag, Thurik, & de Wit, 2004; Glaeser, Laibson, & Sacerdote, 2000). Additional studies have found similar positive links between an entrepreneur's personal networks and new firm performance (Witt, 2004), while others have in proposed a similarly positive relationship for informal networks and social capital in internal corporate ventures (Hayton, 2005). In addition, research has demonstrated how different types of networks are more appropriate for commercial and academic entrepreneurial contexts (Johannisson, 1998). For a more in depth review of the relationship between entrepreneurial networks and performance, we recommend Cooper (2002). In the area of social capital and cognitive biases, we recommend a recent conceptual paper by De Carolis & Saporito (2006). In addition, for a current review of the broader social network context, we refer the reader to both Aldrich & Reuf (2006) and Borgatti & Foster (2003).

Middle-Managers and Employees

Gartner (2001) retells the classic tale of the six blind men and the elephant. We would like to add a new twist to the tale. In our version, a traditional strategic management scholar studies the head of the elephant, measuring all possible dimensions, and then times how fast the elephant can run. Next, that same scholar examines a large sample of elephants, randomly selecting them from herds all of India. After many months, he (or she) draws the conclusion that the larger the elephant's head, the faster it can run. This may be a statistically significant result, but is it interesting? What would happen if the researcher instead measured the elephant's legs and correlated that with its running speed, might he (or she) not get even more accurate results?

Along the lines of this thought experiment, we now review the spartan literature of *personal entrepreneurship capital* regarding managers and employees.

At the level of the middle-manager, Hornsby, Kuratko et al. (Hornsby et al., 1999; Hornsby et al., 2002) have applied their *corporate entrepreneurship activity index* (CEAI) to determine differences in the perceived entrepreneurial environment in a company across managerial levels of analysis (e.g. low middle, middle, and upper middle management) (Hornsby et al., 2002) and across countries (Hornsby et al., 1999). However, as mentioned earlier in this chapter, the questionnaire items of the CEAI do not explicitly address social capital factors.

Other researchers have begun to integrate the needs and motivations of middle-managers into a model of entrepreneurship. One of the first was attempts was made by Miles & Covin (Miles & Covin, 2002), who proposed a framework in which a manager's needs and biases (e.g. need for control; ability and willingness to commit resources; and entrepreneurial risk accepting propensity) interact with the company's corporate venturing objectives (e.g. organizational development and cultural change; strategic benefits and real option development; and quick financial returns) and in turn impact the optimal structuring of the new corporate venture. More recently, Kuratko et al. (2005) published a more sophisticated, causal model of middle-level managers' entrepreneurial behavior where the establishment of new social networks is introduced as a possible model outcome.

At the level of the employee, while conceptual models that include employees in the causal chain between entrepreneurial strategy/culture and performance are slowly emerging in the published literature (Antoncic, 2003; Hayton, 2005), actual collection of data from both managers and employee is sparse, but what is available provides interesting insights into the communication of entrepreneurial vision from supervisor to subordinate (Baum et al., 2004), the

impact of supervisor entrepreneurial behaviors on subordinate satisfaction (Pearce II & Kramer, 1997), and the impact of entrepreneurial strategies on individual role attitudes, organizational identification, and job performance (Monsen, 2005). While Monsen (2005) goes farther Baum & Locke (2004) by considering the social context (e.g. autonomy and teamwork) as moderating factors, Monsen (2005) does not explicitly address social capital.

Filling this gap will better enable us to hire, reward, compensate, and train workers and management, using approaches that increase their individual and collective social capital (Leana et al., 1999) and in turn their personal and organizational entrepreneurship capital. Human resource practices that leverage and promote entrepreneurship capital will increase the ability of workers and management to perform, promote and handle organizational change (cf. Cardon & Stevens, 2004; Hayton, 2003; Leung, 2003; Leung, Zhang, Wong, & Foo, 2006; Levesque, 2005). Likewise, research into of the role of a worker's personal networks in the workplace will help us to train more social mobile (cf. Podolny & Baron, 1997) and more entrepreneurial effective and successful workers.

INTEGRATING THE LEVELS OF ANALYSIS

Having reviewed the literature for each of the levels of analysis, we now proceed to discuss the current research literature that crosses levels of analysis as well as propose future multi-level streams of research. Following this discussion, we will discuss additional new directions for research, public policy, and management practice.

Multi-Level Approach

“Future entrepreneurship research should address the effects of individual-level traits, organizational and market-level variables, and population-level characteristics in models of the

founding of new ventures” (Thornton, 1999). At the start of this chapter, we reported the call for more multi-level research by Davidsson & Wiklund (2001) and on the multi-level framework from Wennemers & Thurik (1999, see Figure 4, p. 51), both of whom not only propose conditions for entrepreneurship for the individual, firm, and macro levels, but who also propose that the entrepreneurship elements at one level impact entrepreneurship elements at other levels. For example, Wennemers & Thurik (1999, see Figure 4, p. 51) contend that entrepreneurial attitudes, skills, and actions can lead to start-ups, entry into new markets, and innovations at the firm level, which can lead to variety, competition, and selection at the economic level. Specific measures of these outcomes at each level would include personal wealth, firm performance, and economic growth and competitiveness, respectively (Wennemers et al., 1999, see Figure 4, p. 51).

Further, both Davidsson & Wiklund (see Figure 2 on Page 91 2001) propose a more comprehensive typology based on outcomes being differentially positive or negative at the individual and societal levels of analysis, suggesting a broader spectrum of entrepreneurs and entrepreneurship than has previously been studied. Similarly, Ibarra, Kilduff, & Tsai (see Table 1 on Page 60 2005) propose a related two-dimensional model where the differential levels (e.g. high or low) of social capital at the individual and communal levels result in very different entrepreneurial environments in a region. This has implications for researchers examining the effects of individual-level entrepreneurial activity and networks have on markets and economic regions (cf. Bygrave & Minniti, 2000; Minniti, 2005). For a related organization-level discussion on the need to balance individual and organizational social capital see Leana & Van Buren (1999). The next step would be to empirically test these multi-level propositions and their implications for entrepreneurial action and outcomes.

One such multi-level approach is suggested by a recent book by Miles, Miles, & Snow (2005), in which they describe a futuristic network-based organization, OpWin, which embodies continuous innovation and collaborative entrepreneurship. Information critical for innovation is owned by any one organization, but rather is shared through the network through the efficient use of technology with a focus on group outcomes (Miles et al., 2005). This novel is based on Miles & Snow's (1995) human investment model, which espouses that investments in capabilities and trust should be made at the individual level, the team level, the firm level, and the network level. Multi-level models of entrepreneurship, and fundamental processes such as organizational learning (Crossan, Lane, & White, 1999; Dutta et al., 2005), are needed to better understand how the different levels of analysis form and inform each other. Reviews of the more general literature on network-organizations are presented by Podolny & Page (1998) and by Contractor, Wasserman, & Faust (2006).

Alternate approaches can be drawn from recent overview articles on entrepreneurship in established firms, which is often labeled as strategic entrepreneurship and corporate entrepreneurship.

When large and established firms act entrepreneurially, it has a number of more specific names, depending on the actor and the level of analysis: corporate venturing, intrapreneurship, strategic renewal, and domain redefinition (cf. Sharma & Chrisman, 1999; Stopford & Baden-Fuller, 1994). Strategic entrepreneurship, as defined by Ireland, Hitt and Sirmon (2003), incorporates an entrepreneurial mindset, an entrepreneurial culture, entrepreneurial leadership, strategic management of resources, and the application of creativity to develop innovations. Resources to be managed strategically include financial, human, and social capital. Of particular interest to us in this chapter are social capital resources, which are defined as the set of

relationships “between individuals (internal social capital) and between individuals and organizations (external social capital) that facilitate action”(Hitt, Ho-Uk, & Yucel, 2002; Ireland et al., 2003). Whereas “internal social capital is related to realized social capital”, “external social capital can serve as a source of new knowledge and as a result, is related to potential absorptive capacity” (Ireland et al., 2003). Empirical evidence of the moderating effect of absorptive capacity on the relationship between social capital and evidence is provided by Tsai (2001). As such, we see promise and potential for further research into the intersection of entrepreneurship capital and absorptive capacity at all four levels of analysis, with a particular focus on influences across the levels of analysis.

Dess et al. (2003), in a review article of corporate entrepreneurship research, likewise applying an organizational learning lens and make calls for future research. Specifically, they highlight the emerging and critical role of social exchange in the corporate entrepreneurship process. Further, they call for a reassessment of the outcomes of corporate entrepreneurship research, and in particular research into how social, human, and intellectual capital can be used to create competitive advantage and wealth. One proposed measure of a firm’s social capital is its network of relationships that can provide valuable tangible and intangible resources (Adler et al., 2002). Additional measures can be borrowed from the more general literature on social capital in organizations, referred to earlier in this chapter (Leana et al., 1999; Nahapiet et al., 1998), as well as related multi-level literature on social networks (Brass, Galaskiewicz, Greve, & Tsai, 2004). Following learning theory, outcomes might “include rapid, deep, and broad learning of new technologies and skills” (Dess et al., 2003).

New directions for research, public policy, and management practice

One new direction is to go beyond this study and to address other agents and levels-of-analysis. For example, in reviewing the literature on strategic leadership in entrepreneurial firms, Daily et al. (2002) identified not only CEOs/founders and top management teams, which we address in this chapter, but also boards of directors and venture capitalists, who we do not address. For example, Podolny (2001) demonstrated a link between social network characteristics (e.g. structural holes), two types of market uncertainty, and the distribution of venture capital funding rounds. Further, Sorenson & Stuart (2001) explore how information flows and inter-firm networks can impact the geographic and industry clustering of VC investments. In addition, De Clercq & Sapienza (2006) found that the amount of relational capital in the venture capitalist – portfolio company dyad and the venture capitalists commitment to the portfolio company are related to perceived performance. In fact, they propose that learning, enhanced by relational capital and commitment, increases perceived performance (De Clercq et al., 2006). In other words, we see another potential interaction between social / entrepreneurship capital and learning as an explanatory mechanism.

Additional new directions can be found in integration of ideas from the field of organizational development and change (ODC). Historically rooted in social psychology, the ODC field is by definition multi-level, integrating human-processual aspects at the individual and team levels with techno-structural elements at the firm level to produce beneficial outcomes for actors at all levels within the organization (Friedlander & Brown, 1974). Depending on the entrepreneurial goal, different models of change, punctuated or continuous, may be more or less appropriate (Weick & Quinn, 1999). Similarly, given the degree of change required and the potential degree of resistance in the organization, industry, or economic region, the

entrepreneurial effort, in particular regarding learning new routines and adopting new values, will need to be carefully structured (cf. Argyris, 1976; Argyris, 2002; Austin, 1997). Naturally, one needs to consider relationships between agents at each level of analysis and across levels-of-analysis (cf. Hage, 1999).

Yet another rich potential research area is to integrate the different types of entrepreneurship capital across the various units of analysis in systematic studies. How is entrepreneurship capital at the individual and team-level related to or influenced by entrepreneurship capital at, say, the regional and industry levels? Are they independent or is there some type of positive interaction resulting in a virtuous circle generating entrepreneurship capital and ultimately competitive advantage?

Of course, this chapter is not complete. There are other streams of research from all levels of analysis, from individual behaviors that contribute to the building social networks (Obstfeld, 2005) and social capital (Bolino, Turnley, & Bloodgood, 2002), to opportunity recognition and exploitation (Arenius & De Clercq, 2005; De Carolis et al., 2006), to low vs. high-tech entrepreneurs (Liao & Welsch, 2003), to family firms (Zahra, Hayton, & Salvato, 2004), to customer relations (Yli-Renko, Autio, & Sapienza, 2001), to R&D alliances (Dickson et al., 2006), to open-source community-based innovation (Shah, 2006), to internationalization (Coviello, 2006), to national culture (Hayton, George, & Zahra, 2002; Steensma, Marino, Weaver, & Dickson, 2000). With these final suggestions, we would like to again urge readers to pursue research in this area of entrepreneurship and human resources management, at all levels of analysis, and to instill a more social and humanistic spirit in their entrepreneurship research.

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