

# THE MATTER OF ENTREPRENEURIAL LEARNING: A LITERATURE REVIEW

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## Abstract

This paper is a comprehensive review of the entrepreneurial learning literature and its engagement with the material aspects of entrepreneurship, as part of the “material turn” in the social sciences. Drawing on actor-network theory, we construct a classificatory scheme and an evaluative matrix to find that this field is dominated by an anthropocentric bias and cognitivist approaches which largely ignore issues of materiality in entrepreneurship. However we also identify some heterogeneous network-based conceptualisations of entrepreneurial learning which could provide the foundations for more materially aware approaches. We conclude by calling for a material turn in entrepreneurial learning and outline some possible avenues for it.

**Keywords:** entrepreneurial learning, materiality, networks, actor-network theory

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## INTRODUCTION

This paper concerns itself with the materiality of *entrepreneurial learning*: a phenomenon, a concept, and an emerging area of literature at the intersection of entrepreneurship studies and the literatures of organisational learning and knowledge. Our proposition is that an object-oriented approach to evaluating this literature can lead to new insights into the nature of entrepreneurial learning, which up to now has been studied predominantly from human-centred perspectives that privilege the role of individual human actors and their cognition. A concern with material resources is not entirely foreign to the literatures of entrepreneurship and organisational learning and knowledge; after all the Resource-Based View (RBV) of the firm (Wernerfelt 1984; Barney 1996) has been influential in both domains. However, the initial concern with strategic material resources has been replaced early on by a focus on intangible, human-centric cognitive resources, such as competences (Prahalad and Hamel 1990) or capabilities (Teece, Pisano et al. 1997), with the RBV thus mutating into more of a “Knowledge-Based View” (Grant 1996, 2003) or a competence perspective (Foss and Mahnke 2002) of the firm.

An object-oriented, material turn has been well under way in other areas of the social sciences (Barry 2001; Pels, Hetherington et al. 2002; Bennett 2010; Bennett and Joyce 2010) and the humanities (Harman 2002, 2004, 2009; Clark 2009; Trentmann 2009). There are now more than 30 years of science and technology studies (STS) (Hackett, Amsterdamska et al. 2008) supporting this perspective, which in the past decade have also inspired the object-oriented study of economics, marketing, markets (Callon 1998; Knorr-Cetina and Bruegger 2000; Callon, Millo et al. 2007; Araujo, Kjellberg et al. 2008; Pinch and Swedberg 2008) and information systems (Orlikowski 2006; Whitley and Darking 2006). STS has also made some inroads into organisation theory (Czarniawska and Hernes 2005). However, relatively speaking, the material turn has been slow in coming to the field of management and organisation studies (Woolgar, Coopmans et al. 2009), and especially to entrepreneurship studies.

The point of these object-oriented approaches is not to depose the human subject as the centre of attention and replace it with inanimate objects but rather to place them on an equal analytical footing within a social science inquiry. Such a symmetrical treatment of humans and nonhumans is advocated in order to allow for new vistas to emerge, which otherwise would have been obstructed by the dichotomies that the traditional subject-object divide kept in place, such as inside-outside, micro-macro, local-global, individual-social or agency-structure (Latour 1999). Actor-network theory (ANT) (Callon 1999; Law 2004; Latour 2005) is one of the more influential of these object-oriented perspectives and it will also inform our approach in the following evaluation of the entrepreneurial learning literature. For our purposes here the application of actor-network theory simply means a general agnosticism towards traditional metaphysical categories such as the aforementioned list of dichotomies, which includes not making a priori judgements about the source and nature of agency (in this case of the actors involved in entrepreneurial learning) before an empirical investigation. Actor-network theory can be described as a hybrid constructivist-realist approach (Latour 1999), which means it has an acute interest in the ways in which emergent entities (such as a new business venture) acquire their reality.

Our review thus is concerned with the matter and materiality of entrepreneurial learning and—with a play on the word—will address four questions. 1) Why does entrepreneurial

learning matter (as a phenomenon, a concept, and an area of literature)? 2) What is the subject matter of entrepreneurial learning as a field? 3) How does entrepreneurial learning matter (i.e. how does it contribute to the emergent materiality of an enterprise)? And finally, 4) what is the matter with entrepreneurial learning as a concept and as a field of study?

There already exist a number of good introductions to the field of entrepreneurial learning. Most notable are the reviews by Harrison and Leitch (Harrison and Leitch 2005; Leitch and Harrison 2008) and Man (2007). Our survey differs from these earlier efforts on a number of points. First, we offer a more comprehensive overview. Harrison and Leitch date the emergence of the field to 2005, while we identify the first discussion of entrepreneurial learning in 1998, with some important precursors in the late 1980s and early 1990s. Our review also offers a more detailed taxonomy than Man's. But a more important contribution is our deployment of an object-oriented perspective to classify the entrepreneurial learning literature in a novel way, which allows us to highlight some relationships and problems that have gone hitherto unnoticed.

## **1. WHY DOES ENTREPRENEURIAL LEARNING MATTER?**

Why should entrepreneurial learning be a matter of interest? First of all, it demands attention as an emergent phenomenon. Entrepreneurs have been increasingly found to engage in formal and informal learning activities, individually—such as enrolling on university courses (Davidsson and Honig 2003)—or collectively—such as forming peer-learning groups (Mäkinen 2002; Tell 2008). The formation of the entrepreneur as a person is considered, in a large part, to be due to learning from experience (Deakins and Freel 1998; Rae 2006).

At the same time entrepreneurial learning is also a theoretical concept that has emerged at the confluence of entrepreneurship studies and the organisational learning and knowledge literatures. While the composite concept of entrepreneurial learning has a relatively recent history (which we trace to Deakins and Freel's 1998 paper), the use of the cognitive metaphors of learning and knowledge for conceptualising entrepreneurship and innovation can be traced further back to Schumpeter's seminal (1934) book, *The Theory of Economic Development*. The link between entrepreneurship and learning has been implicitly or explicitly present in much of the work inspired by Schumpeter, generally within an evolutionary framework, such as the evolutionary theory of the firm (Nelson and Winter 1982), the competence perspective in the theory of the firm (Foss and Mahnke 2002), or theories of organisational routines (Feldman and Pentland 2003; Becker 2004; Miner, Ciuchta et al. 2008).

However, entrepreneurial learning is not just an academic interest. As Jessop (2002: 123) suggests, Schumpeter's definition of the entrepreneurial function in terms of innovation—and its central role in the form of research and development at the heart of the capitalist economic system—has played a crucial role in the development of government policies aimed at fostering the 'knowledge-based economy,' which Jessop sees as an attempt by "state managers, officials, economic and other forces to transform the Keynesian full employment state into a Schumpeterian competition state." Indeed, the ideal of the "knowledge economy" or "learning economy" (Lundvall and Johnson 1994) has long been

a policy objective of e.g. the governments of the European Union and advocated by supranational organisations like the OECD (1996, 2004). The Lisbon Special European Council (EU 2000, 2002, 2003) called specifically for the support of entrepreneurship and the adoption of information and communication technologies (ICTs) by small and medium-sized enterprises (SMEs) in order to foster the knowledge economy.

It can be easily seen from the programmes that government agencies such as e.g. Business Link in the United Kingdom are tasked with delivering that the encouragement and facilitation of entrepreneurial learning is explicit government policy. A search in March 2010 on the Business Link website returned a range of grants available to support entrepreneurial learning, such as Knowledge Transfer Partnerships to help “businesses to develop by accessing expertise in UK universities, colleges and research organisations;” New Entrepreneur Scholarships to provide “support, advice and guidance to first-time entrepreneurs;” or Co-operative Research Projects to provide “finance for contracting out scientific and technological research to help develop new products and processes,” to mention just a few out of 54 research results (Business Link 2010).

To summarise, entrepreneurial learning matters because a) it is an observable phenomenon, something entrepreneurs engage in or are associated with; b) it is a concept that has started to receive increasingly explicit articulation in academic literature in the past decade and which has been implicit in the literature since Schumpeter; and finally c) it is a core policy objective in developed Western countries implemented through funded programmes targeted at entrepreneurs. This last point in fact also provides a partial answer to the question “how does entrepreneurial learning matter?” One way entrepreneurial learning as a concept *matters* is by playing a role in mobilising government resources for the creation and sustenance of enterprises as material entities. In our view the above points provide sufficient reasons for exploring the significance of entrepreneurial learning further.

## **2. WHAT IS THE SUBJECT MATTER OF ENTREPRENEURIAL LEARNING?**

The literature of entrepreneurial learning is a relatively recent development at the intersection of entrepreneurship studies and small business management. While there were some studies in the 1980s and early 1990s which discussed the diffusion of innovation (Attewell 1992; Van De Ven and Polley 1992) or the role of networks in the entrepreneurial process in terms that imply some form of learning (Birley 1985; Dubini and Aldrich 1991; Larson 1991; Powell, Koput et al. 1996), it wasn't until the late 1990s that an area of study specifically focusing on the phenomenon of entrepreneurial learning and deploying entrepreneurial learning as a concept began to emerge. Deakins and Freel's (1998) paper, “Entrepreneurial Learning and the Growth Process in SMEs,” may have been the very first attempt to consider entrepreneurial learning as a particular aspect of the entrepreneurial process in the context of small firms. In the same year, the *International Journal of Entrepreneurial Behaviour & Research* published a special issue on “Learning and the Entrepreneur,” guest edited by Deakins (1998), which was followed by another special issue on “Entrepreneurial Learning” in the same journal in 1999 (Anderson and Deakins 1999a, 1999b).

Despite the initial momentum, it was not until the second half of the subsequent decade that the notion of entrepreneurial learning began to enter the mainstream of entrepreneurship

research, marked by another special issue, this time of the journal *Entrepreneurship: Theory & Practice* (Harrison and Leitch 2005), followed by the associated publication of the first edited volume summarising this nascent field, *Entrepreneurial Learning: Conceptual Frameworks and Applications* (Harrison and Leitch 2008). A search for “entrepreneurial learning” in the Social Sciences Citation Index (SSCI) conducted in December 2009 returned 27 articles, the vast majority of which had been published since 2003. Citations also showed an upward trend from 2005 onwards, suggesting that interest is gradually increasing in this area. If we slightly relax the search criteria and also include journal articles that do not directly use the term “entrepreneurial learning” but discuss entrepreneurship and innovation using similar vocabulary (such as organizational learning) and also include journals that do not get indexed by the SSCI, the number of articles rises to about 80 (excluding the more extensive body of work dealing with entrepreneurial education specifically), most of which still have been published over the past decade.

All in all, entrepreneurial learning is still a relatively new area of study, and its emergence may owe something to the revival of interest in all things entrepreneurial since the 1980s, which Becker and Knudsen (2009) associate among others with globalization, the spread of new ICTs, and the revival of small business. As Harrison and Leitch (2005) suggest, the encounter between entrepreneurship studies and the organizational learning literature (Dierkes 2001; Easterby-Smith and Lyles 2003), which evolved in parallel during the past decade, was another impetus behind the formation of interest in entrepreneurial learning.

Despite its relatively short history, the literature of entrepreneurial learning consists of a variety of theoretical approaches focusing on a diverse range of phenomena, to the extent that it might even be somewhat misleading to refer to it as a single unified area of study. Overall these approaches can be divided into two major camps, depending on their main unit of analysis: those focusing on the figure of the entrepreneur, and those focusing on the organizational context. The former approaches are concerned with the personal learning experiences and cognitive capabilities of the ‘entrepreneurial individual,’ while the latter focus on how entrepreneurial learning takes place as a collective activity at various scales, from the ‘entrepreneurial firm’ and its immediate networks all the way to ‘national systems of innovation.’ To put it more succinctly, entrepreneurial learning is either conceived of as an individual activity or as a collective activity. What follows is a summary of the various conceptualisations within these two camps. For reasons of readability, only key representatives of each approach will be cited, rather than listing every single article published within each category.

The individualistic approaches, which, as Macpherson (2009) also observes in his review of Harrison and Leitch’s (2008) edited book, still dominate this emerging field of study, can be broadly classified into two main groups. First, there are those who consider entrepreneurial learning as a particular type of management learning (Deakins, O’Neill et al. 2000), which results in the formation of an entrepreneur as a particular type of business professional who specialises in setting up new firms to exploit potential business opportunities. Many in this group are building on theories of experiential learning such as Kolb’s (1984), to describe how entrepreneurs evolve by learning from experience (Rae and Carswell 2001; Taylor and Thorpe 2004; Corbett 2005; Politis 2005; Holcomb, Ireland et al. 2009), although there are also some efforts to draw on the organisational learning theory of Argyris and Schön (1978), such as Cope’s (2003). Entrepreneurial learning is also thought of as something that can occur at a particular stage in a manager’s career, such as

when one turns from a 'potential entrepreneur' into a 'nascent entrepreneur' (Rae 2000; Erikson 2003), or when one accumulates a certain amount of experience and capital to start a business in the middle of one's professional career (Rae 2005). Entrepreneurship for this stream of research is generally defined as a behaviour that is learned through experience (Deakins and Freel 1998; Rae 2006).

Within this first group there is a distinct area that defines entrepreneurial learning as a process of opportunity recognition and zooms in on the entrepreneur's cognitive mechanisms for identifying entrepreneurial business opportunities and making decisions about them. However, this work is also characterised by attempts to move beyond cognitive theories which are generally deemed insufficient to account for the entrepreneurial learning situation, by drawing on a variety of theoretical perspectives such as experiential learning (Corbett 2005, 2007), Crossan et al's (1999) 4I framework of organisational learning (Dutta and Crossan 2005), psychological theories of creativity (Lumpkin and Lichtenstein 2005), narrative and discourse analysis (Rae 2006) or the resource-based theory of the firm (Smith, Matthews et al. 2009). Despite these efforts to contextualise the cognitive act of opportunity recognition, ultimately the focus remains on the individual entrepreneur's cognition. This is particularly the case with those researchers who build on Kirzner's (1973) definition of the entrepreneur as someone possessing superior alertness for recognising information that can lead to entrepreneurial opportunities (Minniti and Bygrave 2001; Lévesque, Minniti et al. 2009).

The above literature is very closely associated with the second group, which concerns itself with the flipside or supply side of entrepreneurial learning, i.e. executive education and management training (Leitch and Harrison 1999). "Can entrepreneurship be taught, and if yes, how?" is the main question for these researchers, and they examine this problem within various settings where such education and training can take place, e.g. universities (Wee 2004; Matlay 2006, 2007; Pittaway and Cope 2007a, 2007b; Fisher, Graham et al. 2008), government agencies (Rae 2007), large corporations (Gompers, Lerner et al. 2005) or the small business workplace (Lans, Biemans et al. 2008). This area of the entrepreneurial learning literature is possibly the most developed one, thanks to a series of six special issues on education and training in the small business context in the journal *Education + Training* since 2000 (Matlay 2005).

In contrast to the individualist focus of the above approaches, the "collectivist" camp prefers to define entrepreneurial learning as a social or collective activity, and therefore is more interested in organisational context than the person and cognition of the entrepreneur. Depending on the organisational metaphor used to define the shape and size of the given unit of analysis, the various organisational entities discussed in the literature, from the very small to the very large, could be ranked as follows: a) the individual firm (SME or corporate R&D department) context, b) inter-organisational relationships within a network of organisations, and c) national innovation systems.

Within the individual firm category, the exploration of more collectivist or social forms of entrepreneurial learning started off by the application of the concept of "organisational learning as adaptation" (Levitt and March 1988) to the process of entrepreneurship defined as innovation development (Van De Ven and Polley 1992). In parallel to that there were also efforts to apply the concept of "the learning organisation" (Gibb 1997) or "learning company" (Pedler, Burgoyne et al. 1991) to the SME context (Choueke and Armstrong

1998; Gray and Gonsalves 2002; Devins, Johnson et al. 2005), in pursuit of the normative ideal of an entrepreneurial learning organisation “that facilitates the learning of all its members and continually transforms itself” (Pedler, Burgoyne et al. 1991: 1). While the shift from the individual entrepreneur to the firm as the unit of analysis has broadened the scope of the concept of entrepreneurial learning, this area of the literature, in common with the aforementioned individualistic approaches, is still more interested in the internal mechanisms of learning than the external sources or objects of learning. The firm has simply replaced the figure of the entrepreneur as the locus of cognition; however, the focus is still on the internal mysteries of learning.

As Pfeffer and Salancik (1978) have cogently argued, while there are good historical and commonsensical reasons for the predominance of an internal perspective in organisation studies, this is a bias that must be balanced against the fact that organisations are inherently dependent on external resources for their continued existence. The claim they make about organisation studies is also true about the literature of entrepreneurial learning we have reviewed so far: “Rather than dealing with problems of acquiring resources, most writers have dealt with the problem of using resources” (Pfeffer and Salancik 1978: 3). When researchers begin considering learning as a form of resource acquisition, the attention inevitably shifts from the internal learning mechanisms to the external sources of learning, most commonly conceptualized as networks of external partners. As Ravasi and Turati (2005: 143) put it, “in entrepreneurial ventures, then, learning often arises from the interaction of a number of actors that are in part external to the organization.”

This network perspective in entrepreneurship studies has had some forerunners—often on the pages of the *Journal of Business Venturing*—who did not directly use the term “entrepreneurial learning,” however whose work laid the foundations for considering learning in terms of networks. While these authors recognize that the acquisition of resources is an important mechanism for the survival of the entrepreneurial firm, they generally tend to make a distinction between the acquisition of resources (such as financial, human and physical resources) as an organizational process on the one hand, and the acquisition of information about these resources via person-to-person networking on the other. Networks are therefore composed of people (or groups of people) that can be either ‘formal’ or ‘informal’ and which serve as sources of “advice, information, and reassurance” (Birley 1985). Dubini and Aldrich (1991) distinguish between personal networks (with individuals) and extended networks (with collectives of individuals, i.e. organizations), which form a social context in which entrepreneurs are embedded.

While also maintaining the distinction between information acquisition and resource acquisition, Larson (1991) takes a less human-centric view and puts forward a concept of the network as an organisational form: a governance arrangement for small entrepreneurial firms which allows them to gain wider access to external resources through not only information exchange but also the integration of computer networks and R&D activities with a range of allies of varying sizes. By forming networks, small firms become larger and stronger through their alliances (an insight that is also at the heart of actor-network theory (Latour 1988)). Powell, Koput et al. (1996) push the concept further by designating the network (rather than the individual firm) as the actual “locus of innovation” where collective learning as a social construction process (Brown and Duguid 1991) takes place; although they restrict their proposition to industries that are complex, emerging, and where expertise is widely dispersed (such as biotechnology).

This brings us to what was probably the first explicit treatment of the composite concept of entrepreneurial learning by Deakins and Freel (1998) in the small business management and entrepreneurship literatures. The authors review some individual (Kolb 1984) and organisational (Pedler, Burgoyne et al. 1991) learning theories, knowledge-based evolutionary theories of the firm (Nelson and Winter 1982), and network-based approaches to entrepreneurship, but find them unsatisfactory in light of their empirical data. Instead, Deakins and Freel (1998) describe entrepreneurial learning as composed of a number of “entrepreneurial competences”: the abilities to network at an early stage, to assimilate experience and opportunity, to learn from past successes and mistakes, and to access critical resources, including human resources to build the entrepreneurial team. This is a rather heterogeneous definition of entrepreneurial learning, but in contrast with much of the earlier network-based literature, learning is discussed not only as the acquisition of information but also of critical resources. While they do not provide a sufficiently precise definition of entrepreneurship (small business growth and new venture formation are conflated in their account), Deakins and Freel delineate the scope of the entrepreneurial learning field.

Tell (2008) builds on the notion of the network even more explicitly in his study of university-facilitated monthly learning groups of SMEs. He found that the entrepreneurs used their learning network as a ‘reflective tool,’ which enabled both single-loop and double-loop learning to take place (Argyris and Schön 1978). This is another moment when the entrepreneurial learning literature comes very close to the insights of the ANT and STS-inspired works of economic sociology, such as e.g. Beunza and Stark’s (2004, 2009) study of financial models as social devices of reflexivity.

Within the network perspective, there is one more distinct area that needs to be mentioned, which defines entrepreneurial learning as the building of human and social capital, drawing on the work of Granovetter (1973), Bourdieu (1983) and Nahapiet and Ghoshal (1998). This body of work seeks a compromise between the cognitive focus of individualist approaches mentioned in the first camp and the recognition that learning has to do with the acquisition of external resources. However, this acquisition of resources is defined in predominantly cognitive terms, such as the definition of entrepreneurship in terms of recognising opportunities or the definition of human capital as cognitive competence (which results from being educated). Entrepreneurship becomes a problem of recruitment and training of human resources (Davidsson and Honig 2003), and nonhuman resources disappear from view.

Lee and Jones (2008) deploy Nahapiet and Ghoshal’s (1998) notion of cognitive social capital to bridge the gap between individual cognition and the distributed nature of organising. They characterise interactions within an entrepreneurial network as communication between actors, based on their shared language, codes and narratives, which serve as media for distributing information. De Carolis and Saporito (2006) try even more explicitly to link the cognitive aspects of opportunity recognition with the network characteristics of social capital. In general however there is little room in these efforts to consider resources that are other than human.

Although Jones and Macpherson (2006) draw on Crossan, Lane et al.’s (1999) 4I model (organisational learning as a process of Intuiting, Interpreting, Integrating and Institutionalising knowledge) which is focused on the internal goings-on of an organisation,



they introduce a fifth “I”, the Inter-organisational dimension to their definition of entrepreneurial/organisational learning, which brings them in line with the network perspective. They distinguish between entrepreneurial learning, which is personal, and organisational learning, which is collective. They also consider specifically the problem of acquiring resources from external parties. However, just like in the 4I model, which was aimed at overcoming the cognitivist bias of earlier approaches that rely on the notions of human and social capital, the individual still remains the initiator and main source of learning in the 5I model, hence Jones and Macpherson’s effort is closer to the individualist approaches than the more heterogeneous conceptions of networks discussed earlier.

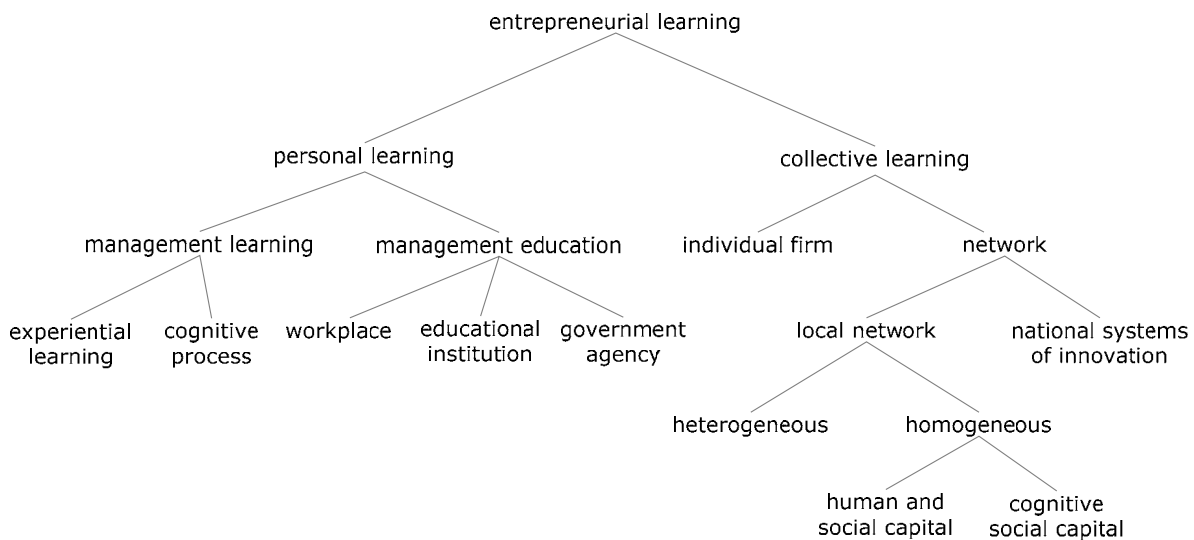
Authors deploying the network perspective for the study of entrepreneurial learning usually focus on local networks of entities that are in the supply chain or in the immediate vicinity of the entrepreneurial firm, such as collaborative partners within the same industry (Mäkinen 2002) or executives of local SMEs (Tell 2008). The concept of a national innovation system in contrast identifies the locus of innovation at a national, systemic level (Lundvall 1992; Nelson and Rosenberg 1993). Such a view tends to aggregate innovation and entrepreneurship that might be happening in or via firms across a nation and connects them with other institutions that affect the level of innovation, such as government agencies, university research labs and start-up incubators, or corporate R&D departments. Entrepreneurship is conceived of as a national phenomenon.

For Matlay and Mitra (2002), entrepreneurship—as a key source of national competitiveness—is an overarching phenomenon constituted by ‘learning,’ ‘knowledge,’ and ‘innovation,’ which arise out of the relationship and interaction between industry, government, and the education system. This “triple helix” (as they call them) of macro-actors is represented at the local level by “a cluster of actors and institutions, including creative individuals, small and medium-sized enterprises (SMEs), larger businesses, support services, and supportive policies and strategies” (Matlay and Mitra 2002: 7). The “Knowledge Economy” is another term to describe such a national innovation system, where entrepreneurship and learning as concepts or phenomena, or industry and education as actors, are inseparable (Matlay 2007). While Matlay and Mitra (2002: 12) speak of clusters, industrial districts, “territorial innovation structures” and ecosystems, the concept of the national innovation system—at least the way they use it—appears to be a special case of the network metaphor, where local and global, or micro- and macro-actors are equally considered as stakeholders in the construction of the local/regional scene for entrepreneurship, and the overall competitiveness of the nation.

To summarise, above we have classified the entrepreneurial learning literature from an object-oriented perspective, drawing on actor-network theory, which focuses on how the traditional dualisms of Western metaphysics and social theory such as the subject-object, individual-social, inside-outside, agency-structure, micro-macro and local-global are conceptualised and dealt with (Latour 1993, 1999, 2005). This has resulted in three main guiding questions for our classificatory scheme: (1) What actors is entrepreneurial agency imputed to? 2) What is the locus of entrepreneurial learning? 3) What is the role of nonhuman objects and materiality in these accounts and theories of entrepreneurial learning? These questions have led us first to distinguish between individualist and collectivist approaches, whether entrepreneurial learning is something that primarily takes place in the body and the mind of the entrepreneur or is distributed over a wider array of entities. The former approaches define entrepreneurial learning as a form of management

learning (which can be an experiential or a cognitive process) or management education. The latter approaches conceptualise entrepreneurial learning as distributed over—or constituted by—a range of stakeholders of various scale and arrangement, from the individual firm to local networks to national systems of innovation. Efforts that focused on local networks considered them as either heterogeneous (consisting of both human and nonhuman resources) or homogeneous (made of human and social capital or cognitive social capital, i.e. discourse). Figure 1 offers an overview of our classification of the entrepreneurial learning literature.

Figure 1: a classification of the entrepreneurial learning literature



This is of course only one possible classification out of many, one particular tool, which makes certain relationships more easily recognisable, while it obscures others. One could argue for instance, that the above classification misses the point that both personal experiential learning and organisational learning through networks is concerned with acquiring information and resources from the external environment, therefore they should be classified under the same branch. This would be somewhat similar to the classification that Easterby-Smith (2008) suggests when he distinguishes between endogenous learning (concerned with internal processes) and exogenous learning (concerned with acquiring external resources). However, conflating experiential learning with network-based learning and resource acquisition under the exogenous learning label would have made it more difficult to recognise the significant chasm between individualist and collectivist conceptualisations of entrepreneurial learning, as well as the lacuna left by the complete absence of concern for nonhuman entities in the personal learning process.

### 3. HOW DOES ENTREPRENEURIAL LEARNING MATTER?

There are at least two ways to interpret this question, whether one focuses on ‘entrepreneurial learning the concept’ or on ‘entrepreneurial learning the phenomenon.’ While according to actor-network theory (Latour 1999) this separation between

phenomenon and concept is an artificial one, it will be useful for our analysis here. The question “How does entrepreneurial learning the concept matter?” focuses on the performative aspects of theory (Callon 2007), i.e. on the material consequences of promoting particular theories of entrepreneurial learning in academic discourse, firms, educational institutions or government agencies. As we have pointed out earlier, according to Jessop (2002) for instance Schumpeterian theories of economic development have had a profound influence on the emergence of the discourse of the knowledge economy and, by implication, on the implementation of policies to foster entrepreneurial learning. The question “How does entrepreneurial learning the phenomenon contribute to the materiality of the emerging enterprise?” on the other hand seeks to link the phenomena identified as entrepreneurial learning with the act of assembling an enterprise as a material entity.

Starting with the first question—“How does entrepreneurial learning the concept matter?”—it becomes necessary to evaluate the outcomes of our classificatory tool (figure 1). Following the principles of actor-network theory, there are two dimensions that emerge from this classification and which can be used to organise this field further. The first one is the number of actors involved in the act or process of entrepreneurial learning. As we have seen, the focus can be either on one actor (one cognitive unit, one individual), or on more than one (the entrepreneurial team, network of actors). The second dimension has to do with the heterogeneity (human or nonhuman, micro or macro) of the actors participating in entrepreneurial learning. On the basis of this criterion, there are ‘subhuman’ actors (entities that are deemed to be constituents of human actors, such as cognition or language), human actors, and hybrid actors (combinations of human and nonhuman actors). If we now plot these dimensions onto a matrix (figure 2), it will allow us to organise and evaluate the results of the initial classification (figure 1) further.

Figure 2: an object-oriented evaluation of entrepreneurial learning theories

<b>no. of actors</b>	more than one	cognitive social capital; discourse	human and social capital; collectives and networks of humans	heterogeneous networks; national systems of innovation
	one	cognition	experiential learning	individual–opportunity (IO) nexus
		subhuman	human	hybrid
		<b>heterogeneity</b>		

It becomes apparent from this matrix that the theories currently populating the entrepreneurial learning field tend to be dominated by anthropocentric ontologies. The following quote from Dutta and Crossan (2005: 436) illustrates well the subject-centred and cognitively-oriented nature of the entrepreneurial theories that occupy the bottom half of the matrix:

[T]he seed of any entrepreneurial action lies in an initial preconscious reflection by an individual (an existing or would-be entrepreneur) about a potential business idea that the individual feels holds some potential in meeting a current or an emerging requirement of customers/potential customers.

In this bottom half of the diagram the focus is on cognition, as a human competence; on experiential learning that forms the individual entrepreneur; and on the “individual–opportunity (IO) nexus” (Smith, Matthews et al. 2009). The “IO nexus” is an attempt to counterbalance the heavily individualist and cognitive focus of entrepreneurship theories by combining the concern for the attributes of the entrepreneur with a simultaneous concern for the nature of entrepreneurial opportunities (Shane 2003). Conceptually it represents a single dyadic structure bridging the human–world divide, which for our classification purposes we can consider as a singular hybrid human-nonhuman construct.

In the top half of the diagram we have theories that consider multiple actors taking part in entrepreneurial learning. Cognitive social capital can be treated as a ‘subhuman’ actor, in the sense that it stands for cognitive and linguistic resources that are thought to constitute humans collectively. Then we have theories of homogeneous networks or collectives made exclusively of human beings. Finally, the top right square houses those approaches which do include both human and nonhuman resources—often of various sizes—in their accounts of entrepreneurial learning.

It is clear from our survey of the literature that the vast majority of academic attention so far has concentrated on the formation and competences of the entrepreneurial individual, and that even efforts to consider the nature of opportunities in the world external to the human subject often slip back into a discussion of cognitive and linguistic constructs (see e.g. Smith, Matthews et al. 2009). Even collectivist approaches are dominated by human actors and cognitive concepts, such as human and social capital or cognitive social capital. Explicit discussions of the role of nonhuman resources in entrepreneurial learning are hard to find, and even implicit considerations have mostly occurred prior to (Larson 1991; Powell, Koput et al. 1996) or at the very start (Deakins and Freel 1998) of this field gaining self-consciousness. Thus one answer to the question—“How does entrepreneurial learning the concept matter?”—is that entrepreneurial learning theories so far have directed resources to the study of the nature and history of the mind of the entrepreneur and focused on articulating the cognitive and linguistic aspects of entrepreneurship. In this way entrepreneurial learning theories have played their part in constructing the entrepreneur and his or her cognitive and other competences, “building up” the entrepreneur as the centre of attention and the presumed source of entrepreneurial agency.

This individualistic and cognitive focus of the extant entrepreneurial learning literature in itself would not be a problem, since these are entirely legitimate areas of inquiry. The problem lies more in what these theories do not address: the role of nonhuman entities in entrepreneurial learning. This absence becomes evident when we attempt to answer our second question, “How does entrepreneurial learning the phenomenon contribute to the

materiality of the emerging enterprise?” This in some ways is a more straightforward question than the first one, as it is inquiring about the role of phenomena identified as ‘entrepreneurial learning’ in the entrepreneurial activity proper, whether one conceives of it as the construction of a new firm (a material entity), or the realisation of an innovation. It would be reasonable to expect that discussions of phenomena described as entrepreneurial learning would shed some light on the core activity it is associated with, which is the material assembly of new organisations or innovations.

However, the existing literature has very little to say on this matter, and this lack of concern for the materiality of the entrepreneurial effort is the greatest casualty of the current anthropocentric perspective that dominates the scene. It is only those working with more heterogeneous conceptions of the network (Larson 1991; Powell, Koput et al. 1996) or entrepreneurial learning (Deakins and Freel 1998) who consider the acquisition of nonhuman resources for the assembly of the enterprise or an innovation as an integral part of their accounts. Matlay and Mitra’s (2002) version of the national innovation system is another interesting exception. They outline a complex network of micro and macro actors (a variety of institutions) that ultimately contribute to the sustenance of the entrepreneurial effort and the construction of the firm. While their discussion still does not address the nitty-gritty of the entrepreneurial construction effort, they show that entrepreneurial firms themselves exist within an eco-system which affects their abilities to innovate.

#### **4. WHAT IS THE MATTER WITH ENTREPRENEURIAL LEARNING?**

Having reviewed the literature of entrepreneurial learning and outlined its current constitution, we are now in a position to identify the main hindrances to its development. There is a general awareness within the literature about its lack of maturity and its main weaknesses as a field (Leitch and Harrison 2008). These include the excessive dominance of the cognitivist paradigm (Rae 2006), the fragmented nature of the field (Warren 2004; Leitch and Harrison 2008), and the general lack of empirical studies, especially qualitative ones (Ravasi and Turati 2005). There is also a perceived lack of conceptual development regarding its core concepts (Leitch and Harrison 2008), which explains why so many recent contributions within this field concentrate on developing conceptual frameworks (e.g. Dutta and Crossan 2005; Politis 2005; Rae 2006; Berglund, Hellström et al. 2007; Franco and Haase 2009), often at the expense of detailed empirical work.

Some of these conceptual problems have been imported from entrepreneurial learning’s ancestral fields, organizational learning and entrepreneurship studies, which themselves lack disciplinary consensus about their founding concepts (Easterby-Smith and Lyles 2003; Ricketts 2008). As Leitch and Harrison (2008: 9) argue, “There is, therefore, no clearly identifiable and agreed corpus of theory constructs, methodologies and results on which to build a theory of entrepreneurial learning.”

Our review has confirmed this state of affairs. For instance, we have found that there is no consensus in the literature on how to define a single identifiable phenomenon called “entrepreneurial learning.” As we saw earlier, entrepreneurial learning can be something that happens strictly inside the entrepreneur’s head, or between and across the heads of a group of independent entrepreneurs and others (as mediated by language), or between an entrepreneur’s head and an external situation (an opportunity). It can happen across one’s

lifetime prior to becoming an entrepreneur or in a single flash of intuition when recognising an opportunity. Entrepreneurial learning can also happen within a firm to several of its employees, or it can take place within a network of suppliers and collaborators. It can even be conceived of as a national phenomenon, facilitated by complex networks of educational institutions and government agencies.

This problem is compounded further by a lack of a commonly shared definition of entrepreneurship in the literature. The term “entrepreneurship” is used equally to refer to the starting of a new enterprise (Davidsson and Honig 2003), to managing existing micro- (Devins, Gold et al. 2005), small and medium-sized companies (Gray and Gonsalves 2002), some of which might even be mature (Jones and Macpherson 2006), or innovation in SME (Ravasi and Turati 2005) and corporate settings (Powell, Koput et al. 1996).

This multiplicity of definitions—or lack of discipline in usage—is a well-known problem in entrepreneurship studies (Gartner 1988; Shane and Venkataraman 2000) and it continues to inspire efforts to develop a unified conceptual basis for the field (for a recent attempt, see Knudsen and Swedberg 2009). Developing a single, widely acceptable definition of entrepreneurship however is not only a conceptual issue but also a matter of political disagreement, as it would affect the allocation of resources (such as academic attention and government funds). For example, Davidsson and Honig (2003) and Friga (2008) call for more research into early-stage start-ups, which they find marginalised, while Rae (2007) argues that new venture entrepreneurs receive too much attention at the expense of owner-managers of existing small firms. In academic practice, new venture creation and small business management is often conflated under the term “entrepreneurship,” while “innovation” is often used as analogous with “entrepreneurship.”

There is a similar problem with the definition of learning, which can be personal or organisational, gradual and adaptive (Van De Ven and Polley 1992) or disruptive and discontinuous (Cope 2003). The latter distinction masks a fundamental ontological disagreement about the relationship of the concept of learning to stability and change. Does entrepreneurial learning contribute to organisational and economic stability or change? This very same ontological disagreement underlies the two most popular entrepreneurship theories in the entrepreneurial learning literature, those of Joseph Schumpeter and Israel Kirzner:

[T]he Schumpeterian entrepreneur is primarily involved in a process of creative destruction in which entrepreneurial opportunities arise essentially as a result of a disequilibrating action of the entrepreneur. In contrast, the Kirznerian entrepreneur is essentially concerned with restoring balance in the economy by embarking on entrepreneurial opportunities that arise out of knowledge and of information asymmetries among its constituents. (Dutta and Crossan 2005: 432)

Entrepreneurial learning can be conceptualised thus as either a behaviour that is discontinuous and leads to the disruption of stability (as in Schumpeterian innovation) or a behaviour that is adaptive and which restores stability (as a Kirznerian arbitrage). It would seem that any concept of entrepreneurial learning that draws on either or both organisational learning and entrepreneurship studies would need to declare its position regarding this ontological dispute, as part of its definition or empirical description. Similarly, if entrepreneurship as a concept is used interchangeably to denote new venture

creation, the management of existing small businesses and corporate innovation, it would need to be explained how these distinct situations can be characterised as being one and the same thing.

Unfortunately, only a minority of the authors reviewed here have gone to the lengths to engage with both the organisational learning literature and entrepreneurship studies to build their composite concept of entrepreneurial learning on specific definitions of learning and entrepreneurship. Even fewer have made clear their ontological assumptions about their core concept's relationship to stability and change (for examples of who have done so see Cope 2003; Dutta and Crossan 2005; Ravasi and Turati 2005). While we agree with Leitch and Harrison (2008: 5) that the development of "grandiose integrative theories within a single powerful paradigm" may not be the most pressing issue for the consolidation of this field, an increase of discipline when it comes to defining the foundational concept of entrepreneurial learning and its constitutive parts would most likely contribute to the field's cohesion and articulation, as Macpherson (2009) also suggests.

## CONCLUSION

Entrepreneurial learning matters. In this paper we have shown why it matters and how it matters. It matters as an academic field, by directing attention to phenomena that can be described as having the character of entrepreneurial learning. It matters as a policy objective that is implemented through government funding and government agencies. In its multiple manifestations (figure 1), it matters as a phenomenon that constitutes the activities of actors directly or indirectly engaged in entrepreneurship.

However, we have also identified some shortcomings in the ways the field deals with the matter and materiality of entrepreneurial learning, which we believe are hindering its development. The field is characterised by a lack of discipline when it comes to defining the composite notion of entrepreneurial learning and its constituent parts. Fundamental ontological assumptions about how it contributes to organisational and economic stability or change are rarely articulated. There is a general bias towards focusing on the least tangibly material aspects of entrepreneurial learning, its cognitive and discursive processes, while leaving the role of objects in the construction of enterprises as undeniably material entities largely unexplored.

At the same time we have also pointed out that the resources for a more materially aware approach to entrepreneurial learning are present in the literature. A number of authors have recognised that entrepreneurial learning is associated with not only the acquisition of information but also with the acquisition of a variety of human and nonhuman resources (Ravasi and Turati 2005), and some have gone as far as extending the concept of learning and innovation to the entrepreneurial firm's external networks (Powell, Koput et al. 1996; Matlay and Mitra 2002). This gave rise to surprising hybrid objects (or quasi-objects, to use another Latourian (1993) term) with specific functions, such as networks as governance mechanisms (Larson 1991), devices of reflexivity (Tell 2008) or "territorial innovation structures" (Matlay and Mitra 2002). Network-based approaches appear to hold the promise to break out from the hegemonic self/world metaphysical model that dominates current conceptions of entrepreneurial learning and which is responsible for much of its anthropocentric and cognitivist bias.

In this paper we have aimed to make a number of contributions to the entrepreneurial learning field. We have conducted a comprehensive overview of the extant literature since its emergence, from the specific object-oriented perspective of actor-network theory. The key outcomes of this approach were the classificatory scheme (figure 1) and the evaluative matrix (figure 2), which have outlined the current constitution of the field and evaluated the main approaches on the basis of their engagement with materiality. The classificatory scheme in particular captures the diversity of the phenomena currently characterised as entrepreneurial learning. And therein may lay this analytical tool's main strength: it not only divides these diverse phenomena but it also connects them under a single umbrella, as it were, facilitating the evaluation—and hopefully evolution—of the field. It creates the conditions to entertain the possibility that the agencies that constitute entrepreneurial learning may not need to reside solely in the singular manifestations studied by the various approaches but may be distributed over a wider network of subjects and objects gathered under this classificatory umbrella. The main finding of our paper however has to be the lamentable lack of concern for the role of nonhuman entities in the entrepreneurial learning process.

As we strived to review and classify the entrepreneurial learning literature in its entirety and from one very specific conceptual perspective, it is inevitable that some aspects of the literature will be treated superficially or not at all, having been sidelined due to lack of space or caught in our conceptual lens's blind spot. A lot remains to be done. Reviewing, classifying and evaluating the various methodological approaches could be one worthwhile task. The tallying up of all existing work in entrepreneurial learning under the various categories we have established could also be helpful in mapping out the distribution and weight of academic attention. The exploration of the normative consequences of the various conceptual and ontological positions we have identified (and especially of the dominance of cognitive and individualistic approaches) for practitioners, education and enterprise policy could be another important task. Finally, we have not had room to develop other social theory themes that could have been appropriate here, such as how the relationship of micro and macro (or local and global) actors are conceptualised, how the agency-structure problem is played out in this literature (Barnes 2001), or how the dispute between realist vs. constructivist ontologies (Dutta and Crossan 2005) affects this field.

Besides the above-mentioned areas, our recommendations for future research—unsurprisingly—have to include a call for a material turn in entrepreneurial learning. We believe that developing a sensibility towards the role of objects in entrepreneurial learning is an important step towards understanding the nature of entrepreneurship as a fundamentally creative and constructive material activity. Such an approach does not need to start from scratch and does not even necessarily need to abandon a cognitivist perspective: theories of distributed cognition for example (Hutchins 1995; Hutchins and Klausen 1996) have already made important advances towards understanding the role of nonhuman artefacts in cognition. Actor-network theory with its principle of generalised symmetry (Callon 1986; Latour 1993) in its treatment of humans and nonhumans and its ethos for detailed ethnographic work can be another suitable approach to pursue Leitch and Harrison's (2008: 8) call for more empirical work by “exploring the process of learning in the context of entrepreneurial practice.”



## REFERENCES

- Anderson, A. R. and Deakins, D. (1999a). 'Editorial: Entrepreneurial Learning.' *International Journal of Entrepreneurial Behaviour & Research*, 5 (3).
- Anderson, A. R. and Deakins, D. (1999b). 'Entrepreneurial Learning Continued.' *International Journal of Entrepreneurial Behaviour & Research*, 5 (4).
- Araujo, L., Kjellberg, H., et al. (2008). 'Market Practices and Forms: Introduction to the Special Issue.' *Marketing Theory*, 8 (1): 5-14.
- Argyris, C. and Schön, D. A. (1978). *Organizational Learning: A Theory of Action Perspective*. Reading, Mass, Addison-Wesley Pub. Co.
- Attewell, P. (1992). 'Technology Diffusion and Organizational Learning: The Case of Business Computing.' *Organization Science*, 3 (1): 1-19.
- Barnes, B. (2001). 'The Macro-Micro Problem and the Problem of Structure and Agency.' *Handbook of Social Theory*. G. Ritzer and B. Smart. London, SAGE: 339-352.
- Barney, J. B. (1996). 'The Resource-Based Theory of the Firm.' *Organization Science*, 7 (5): 469-469.
- Barry, A. (2001). *Political Machines: Governing a Technological Society*. London, Athlone.
- Becker, M. C. (2004). 'Organizational Routines: A Review of the Literature.' *Industrial and Corporate Change*, 13 (4): 643-678.
- Becker, M. C. and Knudsen, C. (2009). 'Schumpeter and the Organization of Entrepreneurship'. *The Oxford Handbook of Sociology and Organization Studies: Classical Foundations*. P. S. Adler. Oxford, Oxford University Press: 307-326.
- Bennett, J. (2010). *Vibrant Matter: A Political Ecology of Things*, Duke University Press.
- Bennett, T. and Joyce, P., Eds. (2010). *Material Powers: Cultural Studies, History and the Material Turn*, Routledge.
- Berglund, H., Hellström, T., et al. (2007). 'Entrepreneurial Learning and the Role of Venture Capitalists.' *Venture capital*, 9 (3): 165-182.
- Beunza, D. and Stark, D. (2004). 'Tools of the Trade: The Socio-Technology of Arbitrage in a Wall Street Trading Room.' *Industrial and Corporate Change*, 13 (2): 369-400.
- Beunza, D. and Stark, D. (2009). 'Looking out, Locking In: Financial Models and the Social Dynamics of Arbitrage Disasters'. Unpublished manuscript.
- Birley, S. (1985). 'The Role of Networks in the Entrepreneurial Process.' *Journal of Business Venturing*, 1 (1): 107-117.
- Bourdieu, P. (1983). 'Forms of Capital'. *Handbook of Theory and Research for the Sociology of Education*. J. Richardson. New York, Greenwood Press: 241-258.
- Brown, J. S. and Duguid, P. (1991). 'Organizational Learning and Communities-of-Practice: Toward a Unified View of Working, Learning, and Innovating.' *Organization Science*, 2 (1): 40.
- Business\_Link. (2010). 'Grants and Support Directory: Grants Results.' Retrieved 24 March 2010, from <http://online.businesslink.gov.uk/bdotg/action/gsdAllResults?category=1&r.lc=en&page=6&refpage=3&gsp=13&gsp=14>.
- Callon, M. (1986). 'Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St. Briec Bay'. In *Power, Action, and Belief: A New Sociology of Knowledge?* J. Law. London, Routledge & Kegan Paul.
- Callon, M. (1998). *The Laws of the Markets*. Oxford, Blackwell.

- Callon, M. (1999). 'Actor-Network Theory: The Market Test'. *Actor Network Theory and After*. J. Law and J. Hassard. Oxford, Blackwell's for Sociological Review: 181-195.
- Callon, M. (2007). 'What Does It Mean to Say That Economics Is Performative?'. *Do Economists Make Markets? On the Performativity of Economics*. D. MacKenzie, F. Muniesa and L. Siu. Princeton, New Jersey, Princeton University Press: 311-357.
- Callon, M., Millo, Y., et al. (2007). *Market Devices*. Oxford, Blackwell.
- Choueke, R. and Armstrong, R. (1998). 'The Learning Organisation in Small and Medium-Sized Enterprises: A Destination or a Journey?' *International Journal of Entrepreneurial Behaviour & Research*, 4 (2): 129-140.
- Clark, A. (2009). 'Editor's Introduction: Special Issue on Material Culture.' *Journal of British Studies*, 48 (2): 279-383.
- Cope, J. (2003). 'Entrepreneurial Learning and Critical Reflection - Discontinuous Events as Triggers for 'Higher-Level' Learning.' *Management Learning*, 34 (4): 429-450.
- Corbett, A. C. (2005). 'Experiential Learning within the Process of Opportunity Identification and Exploitation.' *Entrepreneurship Theory and Practice*, 29 (4): 473-491.
- Corbett, A. C. (2007). 'Learning Asymmetries and the Discovery of Entrepreneurial Opportunities.' *Journal of Business Venturing*, 22 (1): 97-118.
- Crossan, M. M., Lane, H. W., et al. (1999). 'An Organizational Learning Framework: From Intuition to Institution.' *The Academy of Management Review*, 24 (3): 522-537.
- Czarniawska, B. and Hernes, T. (2005). *Actor-Network Theory and Organizing*. Malmö, Liber ; Copenhagen: Copenhagen Business School Press.
- Davidsson, P. and Honig, B. (2003). 'The Role of Social and Human Capital among Nascent Entrepreneurs.' *Journal of Business Venturing*, 18 (3): 301-331.
- De Carolis, D. M. and Saporito, P. (2006). 'Social Capital, Cognition, and Entrepreneurial Opportunities: A Theoretical Framework.' *Entrepreneurship: Theory & Practice*, 30 (1): 41-56.
- Deakins, D. (1998). 'Learning and the Entrepreneur.' *International Journal of Entrepreneurial Behaviour & Research*, 4 (2).
- Deakins, D. and Freel, M. (1998). 'Entrepreneurial Learning and the Growth Process in SMEs.' *The Learning Organization*, 5 (3): 144-155.
- Deakins, D., O'Neill, E., et al. (2000). 'Executive Learning in Entrepreneurial Firms and the Role of External Directors.' *Education + Training*, 42 (4/5): 317-325.
- Devins, D., Gold, J., et al. (2005). 'A Conceptual Model of Management Learning in Micro Businesses: Implications for Research and Policy.' *Education + Training*, 47 (8/9): 540-551.
- Devins, D., Johnson, S., et al. (2005). 'Management Development and Learning in Micro Businesses: A 'Missing Link' in Research and Policy'. *Prepared for Research and Evaluation Unit, Small Business Service*, Policy Research Institute, Leeds Metropolitan University.
- Dierkes, M. (2001). *Handbook of Organizational Learning and Knowledge*. Oxford, Oxford University Press.
- Dubini, P. and Aldrich, H. (1991). 'Personal and Extended Networks Are Central to the Entrepreneurial Process.' *Journal of Business Venturing*, 6 (5): 305-313.
- Dutta, D. K. and Crossan, M. M. (2005). 'The Nature of Entrepreneurial Opportunities: Understanding the Process Using the 4I Organizational Learning Framework.' *Entrepreneurship: Theory & Practice*, 29 (4): 425-449.

- Easterby-Smith, M. (2008). 'Preface: A Conversation between Entrepreneurship and Organizational Learning'. *Entrepreneurial Learning: Conceptual Frameworks and Applications*. R. T. Harrison and C. Leitch. London, Routledge: xix-xxii.
- Easterby-Smith, M. and Lyles, M. A. (2003). *The Blackwell Handbook of Organizational Learning and Knowledge Management*. Oxford, Blackwell.
- Erikson, T. (2003). 'Towards a Taxonomy of Entrepreneurial Learning Experiences among Potential Entrepreneurs.' *Journal of Small Business and Enterprise Development*, 10 (1): 106-112.
- EU. (2000). 'The Lisbon Special European Council (March 2000): Towards a Europe of Innovation and Knowledge.' Retrieved 30 April 2006, from <http://europa.eu.int/scadplus/printversion/en/cha/c10241.htm>.
- EU. (2002, 28 June 2002). 'Benchmarking National and Regional E-business Policies for SMEs: Final Report of the 'E-Business Policy Group'.' Retrieved 1 May 2007, from <http://ec.europa.eu/enterprise/ict/policy/benchmarking/final-report.pdf>.
- EU. (2003). 'Thinking Small in an Enlarging Europe: Communication from the Commission to the Council and the European Parliament.' Retrieved 26 April 2007, from [http://ec.europa.eu/enterprise/enterprise\\_policy/sme-package/doc/com26\\_en.pdf](http://ec.europa.eu/enterprise/enterprise_policy/sme-package/doc/com26_en.pdf).
- Feldman, M. S. and Pentland, B. T. (2003). 'Reconceptualizing Organizational Routines as a Source of Flexibility and Change.' *Administrative Science Quarterly*, 48 (1): 94-118.
- Fisher, S. L., Graham, M. E., et al. (2008). 'Starting from Scratch: Understanding the Learning Outcomes of Undergraduate Entrepreneurship Education'. *Entrepreneurial Learning: Conceptual Frameworks and Applications*. R. T. Harrison and C. Leitch. London, Routledge: 313-340.
- Foss, N. and Mahnke, V. (2002). *Competence, Governance, and Entrepreneurship: Advances in Economic Strategy Research*. Oxford, Oxford University Press.
- Franco, M. and Haase, H. (2009). 'Entrepreneurship: An Organisational Learning Approach.' *Journal of Small Business and Enterprise Development*, 16 (4): 628 - 641.
- Friga, P. N. (2008). 'Entrepreneurial Knowledge Flows and New Venture Creation'. *Entrepreneurial Learning: Conceptual Frameworks and Applications*. R. T. Harrison and C. Leitch. London, Routledge: 205-227.
- Gartner, W. B. (1988). "'Who Is an Entrepreneur?'" Is the Wrong Question.' *American Journal of Small Business*, 12 (4): 11-32.
- Gibb, A. A. (1997). 'Small firms Training and Competitiveness: Building Upon the Small Business as a Learning Organisation.' *International Small Business Journal*, 15 (3): 13-29.
- Gompers, P., Lerner, J., et al. (2005). 'Entrepreneurial Spawning: Public Corporations and the Genesis of New Ventures, 1986 to 1999.' *Journal of Finance*, 60 (2): 577-614.
- Granovetter, M. S. (1973). 'The Strength of Weak Ties.' *The American Journal of Sociology*, 78 (6): 1360-1380.
- Grant, R. M. (1996). 'Toward a Knowledge-Based Theory of the Firm.' *Strategic Management Journal*, 17 (SUPPL. WINTER): 109-122.
- Grant, R. M. (2003). 'The Knowledge-Based View of the Firm'. *The Oxford Handbook of Strategy*. D. Faulkner and A. Campbell. Oxford, Oxford University Press: 203-227.
- Gray, C. and Gonsalves, E. (2002). 'Organizational Learning and Entrepreneurial Strategy.' *The International Journal of Entrepreneurship and Innovation*, 3: 27-33.

- Hackett, E. J., Amsterdamska, O., et al., Eds. (2008). *The Handbook of Science and Technology Studies*. Cambridge, Mass. ; London, MIT.
- Harman, G. (2002). *Tool-Being: Heidegger and the Metaphysics of Objects*. Chicago, Open Court.
- Harman, G. (2004). *Guerrilla Metaphysics: Phenomenology and the Carpentry of Things*. Chicago, Ill., Open Court.
- Harman, G. (2009). *Prince of Networks: Bruno Latour and Metaphysics*. Melbourne, re.press.
- Harrison, R. T. and Leitch, C. (2008). *Entrepreneurial Learning: Conceptual Frameworks and Applications*. London, Routledge.
- Harrison, R. T. and Leitch, C. M. (2005). 'Entrepreneurial Learning: Researching the Interface between Learning and the Entrepreneurial Context.' *Entrepreneurship: Theory & Practice*, 29 (4): 351-371.
- Holcomb, T. R., Ireland, R. D., et al. (2009). 'Architecture of Entrepreneurial Learning: Exploring the Link among Heuristics, Knowledge, and Action.' *Entrepreneurship Theory and Practice*, 33 (1): 167-192.
- Hutchins, E. (1995). *Cognition in the Wild*. Cambridge, Mass, MIT Press.
- Hutchins, E. and Klausen, T. (1996). 'Distributed Cognition in an Airline Cockpit'. *Cognition and Communication at Work*. Y. Engeström and D. Middleton. Cambridge, Cambridge University Press: 15-34.
- Jessop, B. (2002). *The Future of the Capitalist State*. Cambridge, Polity.
- Jones, O. and Macpherson, A. (2006). 'Inter-Organizational Learning and Strategic Renewal in SMEs - Extending the 4I Framework.' *Long Range Planning*, 39 (2): 155-175.
- Kirzner, I. M. (1973). *Competition and Entrepreneurship*, Chicago, London: University of Chicago Press.
- Knorr-Cetina, K. and Bruegger, U. (2000). 'The Market as an Object of Attachment: Exploring Postsocial Relations in Financial Markets.' *Canadian Journal of Sociology*, 25 (2): 141-168.
- Knudsen, T. and Swedberg, R. (2009). 'Capitalist Entrepreneurship: Making Profit through the Unmaking of Economic Orders.' *Capitalism and Society*, 4 (2).
- Kolb, D. A. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs ; London, Prentice-Hall.
- Lans, T., Biemans, H., et al. (2008). 'The Influence of the Work Environment on Entrepreneurial Learning of Small-Business Owners.' *Management Learning*, 39 (5): 597-613.
- Larson, A. (1991). 'Partner Networks: Leveraging External Ties to Improve Entrepreneurial Performance.' *Journal of Business Venturing*, 6 (3): 173-188.
- Latour, B. (1988). 'Irreductions.'. *The Pasteurization of France*. Cambridge, Mass.; London, Harvard University Press: 273p.
- Latour, B. (1993). *We Have Never Been Modern*. Cambridge, MA, Harvard University Press.
- Latour, B. (1999). *Pandora's Hope: Essays on the Reality of Science Studies*. Cambridge, Mass., London, Harvard University Press.
- Latour, B. (2005). *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford; New York, Oxford University Press.
- Law, J. (2004). *After Method: Mess in Social Science Research*. London, Routledge.

- Lee, R. and Jones, O. (2008). 'Networks, Communication and Learning During Business Start-up - the Creation of Cognitive Social Capital.' *International Small Business Journal*, 26 (5): 559-594.
- Leitch, C. and Harrison, R. T. (2008). 'Entrepreneurial Learning: A Review and Research Agenda'. *Entrepreneurial Learning: Conceptual Frameworks and Applications*. R. T. Harrison and C. Leitch. London, Routledge: 3-23.
- Leitch, C. M. and Harrison, R. T. (1999). 'A Process Model for Entrepreneurship Education and Development.' *International Journal of Entrepreneurial Behaviour & Research*, 5 (3): 83-109.
- Lévesque, M., Minniti, M., et al. (2009). 'Entrepreneurs' Decisions on Timing of Entry: Learning from Participation and from the Experiences of Others.' *Entrepreneurship Theory and Practice*, 33 (2): 547-570.
- Levitt, B. and March, J. G. (1988). 'Organizational Learning.' *Annual Review of Sociology*, 14: 319-340.
- Lumpkin, G. T. and Lichtenstein, B. B. (2005). 'The Role of Organizational Learning in the Opportunity-Recognition Process.' *Entrepreneurship Theory and Practice*, 29 (4): 451-472.
- Lundvall, B.-Å., Ed. (1992). *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*. London, Pinter.
- Lundvall, B.-Å. and Johnson, B. (1994). 'The Learning Economy.' *Journal of Industry Studies*, 1 (2): 23-42.
- Macpherson, A. (2009). 'Book Review : Entrepreneurial Learning: Conceptual Frameworks and Applications.' *International Journal of Entrepreneurial Behaviour & Research*, 15 (6): 622-628.
- Mäkinen, H. (2002). 'Intra-Firm and Inter-Firm Learning in the Context of Start-up Companies.' *The International Journal of Entrepreneurship and Innovation*, 3 (1): 35-43.
- Man, T. W. Y. (2007). 'Understanding Entrepreneurial Learning: A Competency Approach.' *International journal of entrepreneurship and innovation*, 8 (3): 189-198.
- Matlay, H. (2005). 'Education and Training Perspectives in a Small Business Context: Guest Editorial.' *Education + Training*, 47 (8/9).
- Matlay, H. (2006). 'Researching Entrepreneurship and Education: Part 2: What Is Entrepreneurship Education and Does It Matter?' *Education + Training*, 48 (8/9): 704-718.
- Matlay, H. (2007). 'International Perspectives on Entrepreneurship Education: Introduction.' *Industry and higher education*, 21 (6): 385-386.
- Matlay, H. and Mitra, J. (2002). 'Entrepreneurship and Learning: The Double Act in the Triple Helix.' *The International Journal of Entrepreneurship and Innovation*, 3: 7-16.
- Miner, A. S., Ciuchta, M. P., et al. (2008). 'Organizational Routines and Organizational Learning'. *Handbook of Organisational Routines*. M. C. Becker. Cheltenham, Edward Elgar: 152-186.
- Minniti, M. and Bygrave, W. (2001). 'A Dynamic Model of Entrepreneurial Learning.' *Entrepreneurship: Theory & Practice*, 25 (3): 5.
- Nahapiet, J. and Ghoshal, S. (1998). 'Social Capital, Intellectual Capital, and the Organizational Advantage.' *Academy of Management Review*, 23 (2): 242-266.

- Nelson, R. R. and Rosenberg, N. (1993). 'Technical Innovation and National Systems'. *National Innovation Systems: A Comparative Analysis*. R. R. Nelson. Cary, NC, USA, Oxford University Press: 3-21.
- Nelson, R. R. and Winter, S. G. (1982). *An Evolutionary Theory of Economic Change*. Cambridge, Mass., Belknap Press of Harvard University Press.
- OECD. (1996). 'The Knowledge-Based Economy.' Retrieved 21 May 2009, from <http://www.oecd.org/dataoecd/51/8/1913021.pdf>.
- OECD. (2004). 'ICT, E-Business and SMEs.' Retrieved 1 May 2007, from <http://www.oecd.org/dataoecd/32/28/34228733.pdf>.
- Orlikowski, W. J. (2006). 'Material Knowing: The Scaffolding of Human Knowledgeability.' *European Journal of Information Systems*, 15 (5): 460-466.
- Pedler, M., Burgoyne, J., et al. (1991). *The Learning Company: A Strategy for Sustainable Development*, McGraw-Hill.
- Pels, D., Hetherington, K., et al. (2002). 'The Status of the Object: Performances, Mediations, and Techniques.' *Theory, Culture & Society*, 19 (5): 1-21.
- Pfeffer, J. and Salancik, G. R. (1978). *The External Control of Organizations: A Resource Dependence Perspective*. New York, Harper & Row.
- Pinch, T. J. and Swedberg, R. (2008). *Living in a Material World: Economic Sociology Meets Science and Technology Studies*. Cambridge, Mass.; London, MIT.
- Pittaway, L. and Cope, J. (2007a). 'Entrepreneurship Education - a Systematic Review of the Evidence.' *International Small Business Journal*, 25 (5): 479-510.
- Pittaway, L. and Cope, J. (2007b). 'Simulating Entrepreneurial Learning - Integrating Experiential and Collaborative Approaches to Learning.' *Management Learning*, 38 (2): 211-233.
- Politis, D. (2005). 'The Process of Entrepreneurial Learning: A Conceptual Framework.' *Entrepreneurship: Theory & Practice*, 29 (4): 399-424.
- Powell, W. W., Koput, K. W., et al. (1996). 'Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology.' *Administrative Science Quarterly*, 41 (1): 116-145.
- Prahalad, C. K. and Hamel, G. (1990). 'The Core Competence of the Corporation.' *Harvard Business Review*, 68 (3): 79-91.
- Rae, D. (2000). 'Understanding Entrepreneurial Learning: A Question of How?' *International Journal of Entrepreneurial Behaviour & Research*, 6 (3): 145 - 159.
- Rae, D. (2005). 'Mid-Career Entrepreneurial Learning.' *Education + Training*, 47 (8/9): 562-574.
- Rae, D. (2006). 'Entrepreneurial Learning: A Conceptual Framework for Technology Based Enterprise.' *Technology Analysis & Strategic Management*, 18 (1): 39-56.
- Rae, D. (2007). 'Achieving Business Focus: Promoting the Entrepreneurial Management Capabilities of Owner-Managers.' *Industry and Higher Education*, 21 (6): 415-426.
- Rae, D. and Carswell, M. (2001). 'Towards a Conceptual Understanding of Entrepreneurial Learning.' *Journal of Small Business and Enterprise Development*, 8 (2): 150-158.
- Ravasi, D. and Turati, C. (2005). 'Exploring Entrepreneurial Learning: A Comparative Study of Technology Development Projects.' *Journal of Business Venturing*, 20 (1): 137-164.
- Ricketts, M. (2008). 'Theories of Entrepreneurship: Historical Development and Critical Assessment'. *The Oxford Handbook of Entrepreneurship*. M. Casson, B. Yeung, A. Basu and N. S. Wadson. Oxford, Oxford University Press: 33-58.

- Schumpeter, J. A. (1934). *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. Cambridge, Harvard University Press.
- Shane, S. (2003). *A General Theory of Entrepreneurship: The Individual-Opportunity Nexus*. Cheltenham, UK, Edward Elgar.
- Shane, S. and Venkataraman, S. (2000). 'The Promise of Entrepreneurship as a Field of Research.' *Academy of Management Review*, 25 (1): 217-226.
- Smith, B. R., Matthews, C. H., et al. (2009). 'Differences in Entrepreneurial Opportunities: The Role of Tacitness and Codification in Opportunity Identification.' *Journal of Small Business Management*, 47 (1): 38-57.
- Taylor, D. W. and Thorpe, R. (2004). 'Entrepreneurial Learning: A Process of Co-Participation.' *Journal of Small Business and Enterprise Development*, 11 (2): 203-211.
- Teece, D., J. , Pisano, G., et al. (1997). 'Dynamic Capabilities and Strategic Management.' *Strategic Management Journal*, 18 (7): 509.
- Tell, J. (2008). 'The Emergent Nature of Learning Networks'. *Entrepreneurial Learning: Conceptual Frameworks and Applications*. R. T. Harrison and C. Leitch. London, Routledge: 272-287.
- Trentmann, F. (2009). 'Materiality in the Future of History: Things, Practices, and Politics.' *Journal of British Studies*, 48 (2): 283-307.
- Van De Ven, A. H. and Polley, D. (1992). 'Learning While Innovating.' *Organization Science*, 3 (1): 92-116.
- Warren, L. (2004). 'A Systemic Approach to Entrepreneurial Learning: An Exploration Using Storytelling.' *Systems Research and Behavioral Science*, 21 (1): 3-16.
- Wee, K. N. L. (2004). 'A Problem-Based Learning Approach in Entrepreneurship Education: Promoting Authentic Entrepreneurial Learning.' *International Journal of Technology Management*, 28 (7-8): 685-701.
- Wernerfelt, B. (1984). 'A Resource-Based View of the Firm.' *Strategic Management Journal*, 5 (2): 171.
- Whitley, E. A. and Darking, M. (2006). 'Object Lessons and Invisible Technologies.' *Journal of Information Technology*, 21 (3): 176-184.
- Woolgar, S., Coopmans, C., et al. (2009). 'Does STS Mean Business?' *Organization*, 16 (1): 5-30.