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Creating the Future Together: Toward a Framework for Research Synthesis in Entrepreneurship

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To develop a body of evidence-based knowledge on entrepreneurship, findings and contributions from the positivist, narrative, and design research traditions in this area need to be combined. Therefore, a framework for research synthesis in terms of social mechanisms, contextual conditions, and outcome patterns is developed in this paper. Subsequently, a synthesis of the existing body of research findings on entrepreneurial opportunities serves to illustrate how this framework can be applied and provides results that inform entrepreneurial action. Finally, we discuss how this synthetic approach serves to systematically connect the fragmented landscape of entrepreneurship research, and thus gradually build a cumulative and evidence-based body of knowledge on entrepreneurship.

Introduction

Broadly defined, entrepreneurship involves efforts to bring about new economic, social, institutional, or cultural environments (Rindova, Barry, & Ketchen, 2009). Since Schumpeter's (1911, 1942) pioneering work, entrepreneurship has become widely acknowledged as the key driver of the market economy. Yet, entrepreneurship research as a scholarly discipline is relatively young, and several attempts toward developing a coherent entrepreneurship "research paradigm" have been made (e.g., Davidsson, 2003; Katz & Gartner, 1988; Sarasvathy, 2001; Shane, 2003; Shane & Venkataraman, 2000; Stevenson & Jarillo, 1990). In this respect, the landscape of entrepreneurship research is still to a large extent multiparadigmatic in nature, including fundamentally different perspectives on what entrepreneurship is, how entrepreneurial opportunities are formed, what determines the performance of new ventures, and so forth (Ireland, Webb, & Coombs, 2005; Leitch, Hill, & Harrison, 2010; Zahra & Wright, 2011).

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This results in widespread confusion and frustration among entrepreneurship researchers regarding the lack of convergence toward a single paradigm and the continuing lack of definitional clarity (Davidsson, 2008; Ireland et al., 2005). Shane's (2012) and Venkataraman, Sarasvathy, Dew, and Forster's (2012) reflections on the 2010 Academy of Management Review decade award for their article "*The promise of entrepreneurship as a field of research*" (Shane & Venkataraman, 2000), as well as the subsequent debate, illustrate the disagreement on key paradigmatic issues among prominent entrepreneurship researchers. These differences are not only academic in nature, but also have profound practical implications. For instance, the narrative–constructivist notion of transformation implies that entrepreneurs should focus on acting and experimenting rather than trying to predict the future, as they cannot acquire valid knowledge about uncertain and partly unknowable environments (e.g., Sarasvathy, 2001; Venkataraman et al., 2012). By contrast, other researchers advocate that entrepreneurs should predict carefully, using comprehensive analysis and systematic procedures, before engaging in entrepreneurial activities (e.g., Delmar & Shane, 2003).

Fundamentally different perspectives on the phenomenon of entrepreneurship together may provide a deeper and broader understanding than any single perspective can do. However, different ontological and epistemological points of view are also difficult to reconcile and may have diverging implications (Alvarez & Barney, 2010; Leitch et al., 2010). In this paper, we seek to respect the distinct research paradigms currently existing in the field of entrepreneurship, rather than attempt to reconcile highly different assumptions. We start from the idea that the future development of the field of entrepreneurship, as a body of evidence-based knowledge, largely depends on building platforms for communication and collaboration across different paradigms as well as across the practice–academia divide (cf. Argyris, Putnam, & McLain Smith, 1985; Frese, Bausch, Schmidt, Strauch, & Kabst, 2012; Romme, 2003; Rousseau, 2012). In this paper, we draw on the literature on mechanism-based explanations (e.g., Gross, 2009; Hedström & Ylikoski, 2010; Pajunen, 2008) to introduce a mechanism-based research synthesis framework that involves outcome patterns, mechanisms, and contextual conditions. Moreover, we illustrate how this framework can synthesize research across different entrepreneurship paradigms.

This paper contributes to the literature on entrepreneurship research methods (e.g., Davidsson, 2008; Frese et al., 2012; Ireland et al., 2005) as well as the literature on balancing the scientific and practical utility of research (Corley & Gioia, 2011; Van de Ven, 2007; Van de Ven & Johnson, 2006), by developing a coherent approach that enhances the practical relevance of scholarly work. Defining and developing a research synthesis framework is essential to this endeavor. The framework developed in this paper serves to review and synthesize a dispersed body of research evidence in terms of outcome patterns, contextual conditions, and social mechanisms. As such, this paper may also spur a dialogue on the plurality of the entrepreneurship field's ontology, epistemology, and research methods, and thus advance it as a scholarly discipline *and* professional practice.

The argument is organized as follows. First, we discuss three modes of studying entrepreneurship that have emerged in the literature: the positivist, narrative, and design research mode. Subsequently, a mechanism-based framework for research synthesis across the three research modes is introduced. A synthesis of the fragmented body of literature on opportunity perception, exploration, and exploitation then serves to demonstrate how this framework can be applied and can result in actionable insights. Finally, we discuss how the research synthesis framework developed in this paper serves to connect entrepreneurship theory and practice in a more systematic manner, in order to build a cumulative body of knowledge on entrepreneurship.

Three Modes of Entrepreneurship Research

The field of entrepreneurship research is multidisciplinary and pluralistic in nature. It is multidisciplinary in terms of the economic, psychological, sociological, and other theories and methods it draws upon. More importantly, the pluralistic nature of the current landscape of entrepreneurship research arises from three very different modes of engaging in entrepreneurship research, labeled here as the positivist, narrative, and design mode. Table 1 outlines the main differences and complementarities of these research modes.

The *positivist* research mode starts from a representational view of knowledge, and looks at entrepreneurial phenomena as (relatively objective) empirical objects with

Table 1

Three Modes of Engaging in Entrepreneurship Research (adapted from Romme, 2003)

	Positivist mode	Narrative mode	Design mode
Purpose	Understand entrepreneurship on the basis of consensual objectivity, by uncovering general conditions and patterns from empirical data (cf. Aristotle's *episteme*).	Portray, understand, and critically reflect on the values, experience, and imagination of entrepreneurs, also in relation to the economic, social, and cultural environments they operate in (cf. Aristotle's *phronesis*).	Train, advise, and help entrepreneurs and their stakeholders in their endeavor to create value and newness (cf. Aristotle's *techne*).
Role model	Natural sciences (e.g., physics) and other disciplines that have adopted the positivist approach (e.g., economics).	Humanities (e.g., aesthetics, hermeneutics, cultural studies, literature, philosophy) and arts (e.g., sculpture, painting, languages).	Design and engineering disciplines (e.g., architecture, aeronautical engineering, computer science).
View of knowledge	*Representational*: knowledge represents the world as it is.	*Constructivist and narrative*: all knowledge arises from what entrepreneurs and their stakeholders think and say about the world.	*Pragmatic*: knowledge is primarily developed to serve (creative) action by entrepreneurs and their stakeholders.
Nature of thinking	*Descriptive and analytic*: driven by a search for general and valid knowledge.	*Imaginative, critical and reflexive*: appreciating complexity is given precedence over the goal of achieving general knowledge.	*Normative and synthetic*: driven by intentions and purposes and inspired by ideal solutions (ideation).
Research focus	Entrepreneurial phenomena as *empirical objects* (cf. facts) with well-defined descriptive properties that can be observed from an outsider position.	Entrepreneurial action and sensemaking (in their broader contexts) as *genuinely creative acts*.	Entrepreneurial processes and outcomes as *artifacts* with descriptive as well as imperative (possibly ill-defined) properties.
	Describe and explain these empirical objects in terms of general causal relationships among variables (hypotheses); collect quantitative data and use inferential statistics to test hypotheses. Conclusions stay within the boundaries of the analysis.	Interpret and assess particular entrepreneurship narratives in their specific contexts: Do they involve radical shifts in thinking, legitimacy problems, fair outcomes, and so forth? Conclusions may go beyond the boundaries of the study.	Develop principles ("real helps" for entrepreneurs) by observing experienced entrepreneurs in action, reading their diaries, etc.; then extract and codify principles to develop pragmatic tools and mechanisms that can possibly be refined in the laboratory or classroom.

well-defined descriptive properties studied from an outsider position (e.g., Davidsson, 2008; Katz & Gartner, 1988). Shane and Venkataraman's (2000) seminal paper exemplifies the positivist mode by staking out a distinctive territory for entrepreneurship (with the opportunity–entrepreneur nexus as a key notion) that essentially draws on mainstream social science. Most entrepreneurship studies published in leading journals draw on positivism, by emphasizing hypothesis testing, inferential statistics, and internal validity (e.g., Coviello & Jones, 2004; Haber & Reichel, 2007; Hoskisson, Covin, Volberda, & Johnson, 2011; Welter, 2011).

The *narrative* mode draws on a constructivist view of knowledge, assuming it is impossible to establish objective knowledge as all knowledge arises from how entrepreneurs and their stakeholders make sense of the world (Cornelissen & Clarke, 2010; Leitch et al., 2010). The nature of scholarly thinking here is imaginative, critical, and reflexive in order to cultivate a critical sensitivity to hidden assumptions (Chia, 1996; Gartner, 2007a, 2007b). Therefore, studies drawing on the narrative mode typically focus on qualitative data, for example in the form of case studies or grounded theory development. Whereas the positivist mode emphasizes processes at the level of either the individual entrepreneur or the configuration of the social context and institutional outcomes (Cornelissen & Clarke), researchers drawing on the narrative mode acknowledge the complexity of entrepreneurial action and sensemaking in its broader context (e.g., Downing, 2005; Garud & Karnøe, 2003; Hjorth & Steyaert, 2005). As such, a key notion in the narrative tradition is the notion of (entrepreneurial) action and sensemaking as genuinely creative acts (e.g., Berglund, 2007; Chiles, Bluedorn, & Gupta, 2007; Foss, Klein, Kor, & Mahoney, 2008; Sarasvathy & Dew, 2005). Appreciating the authenticity and complexity of these acts is thus given precedence over the goal of achieving general knowledge. An example of this type of work is Garud and Karnøe's study of technology entrepreneurship in the area of wind turbines in Denmark and the United States.

The *design* mode draws on Herbert Simon's (1996) notion of a science of the artificial, implying that entrepreneurial behavior and outcomes are considered as largely artificial (i.e., human made) in nature (Sarasvathy, 2004). As such, entrepreneurial behavior and accomplishments are considered as tangible or intangible *artifacts* with descriptive as well as imperative (although possibly ill-defined) properties. Consequently, entrepreneurship researchers need to "actually observe experienced entrepreneurs in action, read their diaries, examine their documents and sit in on negotiations" and then "extract and codify the 'real helps' of entrepreneurial thought and action" (Sarasvathy & Venkataraman, 2011, p. 130) to develop pragmatic tools and mechanisms that can possibly be refined in experimental work. The rise of "scientific" positivism almost completely drove the design mode from the agenda of business schools (Simon), but design thinking and research have recently been regaining momentum among entrepreneurship researchers (e.g., Dew, Read, Sarasvathy, & Wiltbank, 2009; Sarasvathy, 2003, 2004; Van Burg, Romme, Gilsing, & Reymen, 2008; Venkataraman et al., 2012). Although the initial work of Simon is often considered as having a strong positivist stance, the design research discourse has subsequently developed into a research mode that focuses on how people construct tangible and intangible artifacts that embrace both positivist and constructivist approaches (Cross, 2001; Romme, 2003). Table 1 provides a more detailed account of each research mode.

As can be inferred from Table 1, each research mode may share characteristics with another one. For example, studies drawing on the design mode often also draw on constructivist perspectives on knowledge (e.g., Dew et al., 2009; Van Burg et al., 2008) that are at the center of the narrative perspective. However, the overall purpose of design

research is a pragmatic one (i.e., to develop actionable knowledge), whereas the main purpose of narrative research is to portray and critically reflect. The overall purpose driving each research mode strongly affects the assumptions made about what scholarly knowledge is, how to engage in research, and so forth (see Table 1).

In this respect, each research mode can be linked to one of the "intellectual" virtues or modes identified by Aristotle: episteme, techne, and phronesis. Following Flyvbjerg (2001), the intellectual mode of *episteme* draws on universal, invariable, and context-independent knowledge and seeks to uncover universal truths (e.g., about entrepreneurship). Episteme thus thrives on the positivist idea that knowledge represents reality, and as such, it draws on denotative statements regarding the world as it is. Evidently, the mainstream positivist mode in entrepreneurship research largely exploits and advances the intellectual mode of episteme. By contrast, the narrative mode mainly draws on *phronesis*, which involves discussing and questioning the values and strategies enacted in a particular setting (e.g., the values and strategy that drive a new venture). A key role of phronesis thus is to provide concrete examples and detailed narratives of the ways in which power and values work in organizational settings (Cairns & Śliwa, 2008; Flyvbjerg). Finally, *techne* refers to pragmatic, variable, and context-dependent knowledge that is highly instrumental (Flyvbjerg), for example, in getting a new venture started. This is the intellectual mode that is strongly developed among experienced entrepreneurs, who leverage their own expertise and competences and get things done in a pragmatic "can do" manner (cf. Sarasvathy, 2001).

Aristotle's three intellectual modes appear to be essential and complementary assets to any attempt to create an integrated body of scholarly *and* pragmatic knowledge on entrepreneurship. Consequently, the three research modes outlined in Table 1 can be positioned as complementary resources in an integrated body of knowledge. This raises the question how research findings arising from the positivist, narrative, and design modes can be combined in a cumulative body of knowledge on entrepreneurship.

Mechanism-Based Research Synthesis

The future development of the field of entrepreneurship largely depends on efforts to combine and synthesize contributions from all three modes in Table 1, to be able to develop a body of evidence-based and actionable knowledge. In this section, we describe a framework for research synthesis. In doing so, we seek to respect the uniqueness and integrity of each of the three modes outlined in Table 1, rather than comparing and possibly integrating them.

The literature on evidence-based management, and more recently evidence-based entrepreneurship, has been advocating the adoption of systematic review and research synthesis methods (e.g., Denyer & Tranfield, 2006; Denyer, Tranfield, & Van Aken, 2008; Rousseau, 2006; Rousseau, Manning, & Denyer, 2008) and quantitative meta-analyses (Frese et al., 2012). Briner and Denyer (2012) recently argued that systematic review and research synthesis tools can be distinguished from prevailing practices of reviewing and summarizing existing knowledge in management—such as in textbooks for students, literature review sections in empirical studies, or papers focusing on literature review. The latter practices tend to motivate reviewers to be very selective and emphasize "what is known" rather than "what is not known"; reviewers also tend to cherry-pick particular findings or observations, possibly producing distorted views about the body of knowledge reviewed (Briner & Denyer; Geyskens, Krishnan, Steenkamp, & Cunha, 2009).

Therefore, systematic review and research synthesis methods should be instrumental in synthesizing the literature by drawing on systematic and transparent procedures (Briner & Denyer).

Quantitative meta-analysis serves to systematically accumulate evidence by establishing the effects that are repeatedly observed and cancelling out weaknesses of individual studies, but there always remains a gap between knowledge and action (Frese et al., 2012). Essentially, a meta-analysis can deliver well-validated and tested *predictions* of a phenomenon as the regular outcome of the presence/absence of a number of antecedents, without *explaining* why this phenomenon occurs (cf. Hedström & Ylikoski, 2010; Woodward, 2003). Here, qualitative review and research synthesis protocols, as extensively described and discussed elsewhere (e.g., Denyer & Tranfield, 2006; Denyer et al., 2008; Tranfield, Denyer, & Smart, 2003), have a key complementary role in explaining the contextual contingencies and mechanisms through which particular experiences, perceptions, actions, or interventions generate regular or irregular outcomes (Briner & Denyer, 2012). Therefore, we draw on mechanism-based explanation to develop a broadly applicable perspective on research synthesis in entrepreneurship.

A large and growing body of literature in a wide range of disciplines, ranging from biology to sociology and economics, draws on the "mechanism" notion to explain phenomena (Hedström & Ylikoski, 2010). Basically, mechanisms are defined as something that explains why a certain outcome is produced in a particular context. For instance, organization theorists use the mechanism of "escalation of commitment" to explain ongoing investments in a failing course of action (Pajunen, 2008), and mechanism-based explanations have also gained some foothold elsewhere in management and organization studies (Anderson et al., 2006; Davis & Marquis, 2005; Durand & Vaara, 2009; Pajunen; Pentland, 1999). In particular, studies drawing on a critical realist perspective (cf. Bhaskar, 1978; Sayer, 2000) have used the notion of mechanism to bridge and accumulate insights from different philosophical perspectives (Kwan & Tsang, 2001; Miller & Tsang, 2011; Reed, 2008; Tsoukas, 1989). This focus on abstract mechanisms is relatively agnostic about the nature of social action (Gross, 2009) and thus can steer a path between positivist, narrative, and design perspectives on research.

In the remainder of this paper, we therefore start from the idea that research synthesis serves to identify mechanisms within different studies and establish the context in which they produce a particular outcome (Briner & Denyer, 2012; Denyer et al., 2008; Rousseau et al., 2008; Tranfield et al., 2003). We build on mechanism-based work in sociology that draws on a pragmatic notion of mechanisms (Gross, 2009) and thus avoids the ontological assumptions of critical realism, which some have criticized (Hedström & Ylikoski, 2010; Kuorikoski & Pöyhönen, 2012). The literature on pragmatism has identified the so-called "philosophical fallacy" in which scholars consider categories (e.g., the layered account of reality in critical realism) as essences, although these are merely nominal concepts that have been created to help solve specific problems (Dewey, 1929; Hildebrand, 2003; Kuorikoski & Pöyhönen). This fallacy causes conceptual confusion in the sense that both (critical) realists and antirealists may not appreciate the integrative function and identity of inquiry, which leads them to create accounts of knowledge that project the products of extensive abstraction back onto experience (Hildebrand).

Although there is some variety in the definition and description of mechanisms, the following four characteristics are almost always present (Hedström & Ylikoski, 2010; Pawson, 2002; Ylikoski, 2012). First, a mechanism explains how a particular outcome or effect is created. Second, a mechanism is an irreducible causal notion, referring to how the participating entities (e.g., entrepreneurs or managers) of a process (e.g., decision-making) generate a particular effect (e.g., ongoing investments in a failing course

of action). In some cases, this mechanism is not directly observable (e.g., the market mechanism). Third, mechanisms are not a black box, but have a transparent structure or process that makes clear how the participating entities produce the effect. For instance, Pajunen (2008) demonstrates how an "escalation of commitment" mechanism consists of entities (e.g., decision makers) that jointly do not want to admit the lack of success of prior resource allocations to a particular course of action and therefore decide to continue this course of action. Fourth, mechanisms can form a hierarchy; while parts of the structure of the mechanism can be taken for granted at one level, there may be a lower level mechanism explaining them. In the escalation of commitment example, Pajunen identified three underlying mechanisms: (1) managers assure each other that the past course of action is still the correct one, (2) the owners of the company promote the ongoing course of action and issue bylaws that make divestments more difficult, and (3) creditors fund the continuation of the (failing) course of action by granting more loans. In sum, a well-specified mechanism is a basic theory that explains why particular actions, beliefs, or perceptions in a specific context lead to particular outcomes.

To capture the variety of micro-to-macro levels at which mechanisms can operate in the social sciences, Hedström and Swedberg (1996) created a three-level typology. First, mechanisms can operate at the *individual–cognitive* level, involving desires, beliefs, or knowledge of opportunities. Second, *action-oriented* mechanisms deal with the social behavior of individuals. Third, mechanisms at a *collective* level describe how individuals collectively create a particular outcome. Yet, multiple mechanisms can coproduce a particular outcome at a certain level and in a given context. To identify the correct and most parsimonious mechanisms, counterfactual or rival mechanisms need to be considered (Durand & Vaara, 2009; Woodward, 2003; Ylikoski, 2012). By exploring and/or testing different alternative scenarios that have varying degrees of similarities with the explanatory mechanism proposed, one can assess and establish as to what extent this mechanism is necessary, sufficient, conditional, and/or unique. For instance, by explicitly contrasting two rival mechanism-based explanations, Wiklund and Shepherd (2011) established experimentation as the mechanism explaining the relationship between entrepreneurial orientation and firm performance.

Clearly, even a mechanism-based explanation does not resolve the paradigmatic differences outlined in Table 1 (cf. Durand & Vaara, 2009), nor is it entirely ontologically and epistemologically neutral. As such, the framework for research synthesis outlined in the remainder of this section may be somewhat more sympathetic toward representational and pragmatic than toward the constructivist–narrative view of knowledge, particularly if the latter rejects every effort at developing general knowledge (Gross, 2009). Nevertheless, our framework does create common ground between all three perspectives on entrepreneurship by focusing on outcome patterns, social mechanisms, as well as contextual conditions.

Outcome Patterns

An idea that cuts across the three literatures outlined in Table 1 is to understand entrepreneurship as a societal phenomenon involving particular effects or *outcome patterns*. That is, merely contemplating radically new ideas or pioneering innovative pathways as such do not constitute "entrepreneurship" (Davidsson, 2003; Garud & Karnøe, 2003; Sarasvathy, Dew, Read, & Wiltbank, 2008). Accordingly, entrepreneurship must also include empirical observable outcome patterns such as, for example "wealth or value creation" (Davidsson), "market creation" (Sarasvathy et al.), "creating new options" (Garud & Karnøe), or creating new social environments (Rindova et al., 2009). A key

assumption here is that there are no universal truths or straightforward causalities in the world of entrepreneurship. What works well in a new venture in the professional services industry may not work at all in a high-tech start-up. Thus, we need to go beyond a focus on simple outcome regularities, as there might be different—possibly unobserved—factors (e.g., conditions and mechanisms) influencing the mechanisms at work (Durand & Vaara, 2009). The aim is to establish causal explanations that have the capacity or power to establish the effect of interest (Woodward, 2003). Therefore, research synthesis focuses on (partly) successful or unsuccessful outcome *patterns*, which can be characterized as so-called "demi-regularities" in the sense that they are more than randomly produced, although countervailing factors and human agency may also prevent the outcome (Lawson, 1997; Pawson, 2006).

Social Mechanisms

As previously argued, mechanisms explain why particular outcome patterns occur in a particular context. Many scholars connect social mechanisms to Merton's theories of the middle range that "lie between the minor but necessary working hypotheses that evolve in abundance during day-to-day research and the all-inclusive systematic efforts to develop a unified theory that will explain all the observed uniformities of social behavior, social organization and social change" (Merton, 1968, p. 39; see Hedström & Ylikoski, 2010; Pawson, 2000). Thus, mechanisms do not aim to describe the causal process in a very comprehensive, detailed fashion, but depict the key factors and processes that explain the essence of an outcome pattern. Considering mechanisms as middle-range theories also highlights that mechanisms are not necessarily empirical observable and that conceptual and theoretical work may be needed to identify the mechanisms explaining why certain outcomes are observed in a particular context.

Social mechanisms in the context of entrepreneurship research involve theoretical explanations, for example, learning in the area of opportunity identification (Dimov, 2007), the accumulation of social capital in organizational emergence (Nicolaou & Birley, 2003), fairness perceptions in cooperation processes (e.g., Busenitz, Moesel, Fiet, & Barney, 1997) or effectuation logic in entrepreneurial decision-making (Sarasvathy, Forster, & Ramesh, 2013). Social mechanisms are a pivotal notion in research synthesis because a coherent and integrated body of knowledge can only begin to develop when there is increasing agreement on which mechanisms generate certain outcome patterns in particular contexts.

Contextual Conditions

A key theme in the literature is the heterogeneity and diversity of entrepreneurial practices and phenomena (e.g., Aldrich & Ruef, 2006; Davidsson, 2008; Shane & Venkataraman, 2000). In this respect, Zahra (2007) argues a deeper understanding is needed of the nature, dynamics, uniqueness, and limitations of the context of these practices and phenomena. *Contextual conditions* therefore are a key dimension of the framework for research synthesis proposed here. In this respect, how mechanisms generate outcome patterns is contingent on contextual or situational conditions (Durand & Vaara, 2009; Gross, 2009). For example, continental European universities operating in a social-market economy offer very different institutional, economic, and cultural conditions for creating university spin-offs than their U.S. counterparts. In particular, European universities that want to create university spin-offs need to support and facilitate the

mechanism of opportunity perception and exploitation much more actively than their American counterparts (e.g., Van Burg et al., 2008).

Contextual conditions operate by enabling or constraining the choices and behaviors of actors (Anderson et al., 2006; Pentland, 1999). Agents typically do have a choice in the face of particular contextual conditions, even if these conditions bias and restrict the choice. For example, a doctoral student seeking to commercialize her research findings by means of a university spin-off may face more substantial cultural barriers in a European context than in a U.S. context (e.g., her supervisors may find "this is a dumb thing to do for a brilliant researcher"), but she may decide to push through these barriers. Other types of contextual conditions more forcefully restrict the number of options an agent can choose from; for example, particular legal constraints at the national level may prohibit universities to transfer or license their intellectual property (IP) to spin-offs, which (for the doctoral student mentioned earlier) eliminates the option of an IP-based start-up. In general, the key role of contextual conditions in our research synthesis framework serves to incorporate institutional and structurationist perspectives (DiMaggio & Powell, 1983; Giddens, 1984) that have been widely applied in the entrepreneurship literature (e.g., Aldrich & Fiol, 1994; Battilana, Leca, & Boxenbaum, 2009; Garud, Hardy, & Maguire, 2007).

The Discovery and Creation of Opportunities

We now turn to an example of research synthesis based on this framework. In this section, we synthesize previous research on entrepreneurship drawing on the notion of "opportunity." This substantial body of literature is highly interesting in the context of research synthesis because the positivist, narrative, *and* design mode have been used to conduct empirical work in this area (cf. Dimov, 2011). Moreover, Alvarez and colleagues (Alvarez & Barney, 2007, 2010; Alvarez, Barney, & Young, 2010) recently reviewed a sample of both positivist and narrative studies in this area and concluded these studies draw on epistemological assumptions that are mutually exclusive, which would impede "developing a single integrated theory of opportunities" (Alvarez & Barney, 2010, p. 558). While we agree with Alvarez and Barney that a single integrated theory based on a coherent set of epistemological assumptions (cf. Table 1) may not be feasible, our argument in the previous sections implies that key research findings arising from each of the three research modes outlined in Table 1 can be synthesized in a mechanism-based framework.

Review Approach

The key question driving the literature review is: Which evidence-based insights can be inferred from the literature with regard to how and when entrepreneurs perceive and act upon opportunities? In view of the evidence-based nature of this question, the first step is to include only articles containing empirical studies. In a second phase, after the review of empirical studies, we also turn to related conceptual work. We selected articles that explicitly deal with opportunity perception and/or opportunity-based action. We used the ABI/Inform database and searched for articles in which "opportunity" AND "entrepreneur*" or "opportunities" AND "entrepreneur*" were used in the title, keywords, or abstract. To be able to assess the potential consensus and capture the entire scope of epistemological perspectives in the literature, articles were not only

selected from first-tier entrepreneurship and management journals, but also from some other relevant journals. The articles were selected from *Academy of Management Journal*, *Academy of Management Review*, *Administrative Science Quarterly*, *American Journal of Sociology*, *American Sociological Review*, *British Journal of Management*, *Entrepreneurship and Regional Development*, *Entrepreneurship Theory and Practice*, *International Small Business Journal*, *Journal of Business Research*, *Journal of Business Venturing*, *Journal of Enterprising Culture*, *Journal of International Business Studies*, *Journal of Management*, *Journal of Small Business Management*, *Management Science*, *Organization*, *Organization Science*, *Organizational Behavior and Human Decision Processes*, *Research Policy*, *R & D Management*, *Small Business Economics*, *Strategic Management Journal*, *Technovation*, and *Journal of Management Studies*. As the *Strategic Entrepreneurship Journal* is not included in the ABI/Inform database, we executed an additional search in the Wiley Online Library. The search, executed in May 2012, yielded 504 articles. We examined the abstracts of the articles to assess whether the articles were studying entrepreneurial opportunities as a key variable and divided 188 relevant articles into theoretical (109) and empirical (79) categories (see Table 2 for an overview).

To synthesize the findings, we read each article and coded key relationships between contextual conditions, social mechanisms, and outcome patterns. In addition, we coded the theoretical and philosophical perspectives used by the authors, which showed 51 empirical articles predominantly drawn on a positivist mode, 20 empirical articles follow the constructive–narrative mode, whereas 8 articles are within the design mode or are explicitly agnostic or pragmatic (see Table 3). Similar mechanisms, contexts, and outcome patterns were subsequently clustered, which resulted in an overview of contextual conditions, social mechanisms, and outcome patterns.

Table 2

Selection of Articles Reviewed

Initial search results		Selected empirical articles	
Theoretical	109	*Academy of Management Journal*	2
Empirical	79	*Administrative Science Quarterly*	2
Not relevant	316	*Entrepreneurship and Regional Development*	2
Total	504	*Entrepreneurship Theory and Practice*	16
		International Small Business Journal	3
		Journal of Business Venturing	16
		Journal of Enterprising Culture	6
		Journal of International Business Studies	1
		Journal of Management	1
		Journal of Management Studies	2
		Journal of Small Business Management	2
		Management Science	4
		Organization Science	2
		Organizational Behavior and Human Decision Processes	1
		Research Policy	2
		Small Business Economics	8
		Strategic Entrepreneurship Journal	7
		Technovation	2
		Total	79

Table 3

Empirical Studies in Different Research Modes

Positivist mode	Narrative mode	Design mode (including "agnostic" articles)
51 articles Example Shane (2001) analyzes 1,397 patents assigned to MIT and examines which of the patented technological inventions were commercialized through firm formation. Results show that the invention's importance, radicalness, and patent scope influence the extent to which the invention provides entrepreneurial opportunities.	20 articles Example Hjorth (2007) draws on a narrative approach to explore the commonalities between entrepreneurial characters in the "Toy Story" of Terry Allen, the Marvel Mustang story, and a passage from Shakespeare's *Othello*. He shows the importance of the temporal aspects, events, "fires," and practices with regard to opportunity creation.	8 articles Example Berglund (2007) draws on a phenomenological examination of the opportunities of 19 Swedish mobile Internet entrepreneurs. Berglund concludes that the opportunities are a set of perceptions and projections "that provide the cognitive and practical drivers needed to guide entrepreneurial action" (p. 243).

MIT, Massachusetts Institute of Technology.

Table 4

Frequently Observed Contextual Conditions, Social Mechanisms, and Outcome Patterns

Contextual conditions	Social mechanisms	Outcome patterns
Organizational structures (e.g., corporate and academic contexts). Economic, institutional, and industry structures. Underprivileged situations (e.g., rural areas in Africa). Social network structures (e.g., network density, structural holes, clusters). Facilitation structures (e.g., business incubators) or movements that exert influence. External circumstances (e.g., inventions) and changes in these circumstances. Person and capabilities of the entrepreneur (including gender, genetic make-up, prior knowledge, and experience). Belief structures (including culture).	Individual cognitive framing of opportunities, including biases and heuristics, influenced by prior knowledge and experience. Social mediation: influence of social ties by providing information, resources, and steering decisions. Social interaction: seeking feedback, combining information, and cocreating with others. Self-image: entrepreneur's perceived identity and capabilities. Searching, scanning, and selecting ideas.	Perceiving opportunities (number of opportunities, type of opportunities, and size of opportunities). Exploiting and/or developing opportunities (including the decision to exploit, the creation of new ventures). Performance of exploitation and development of opportunities (e.g., growth, survival).

Synthesis Results

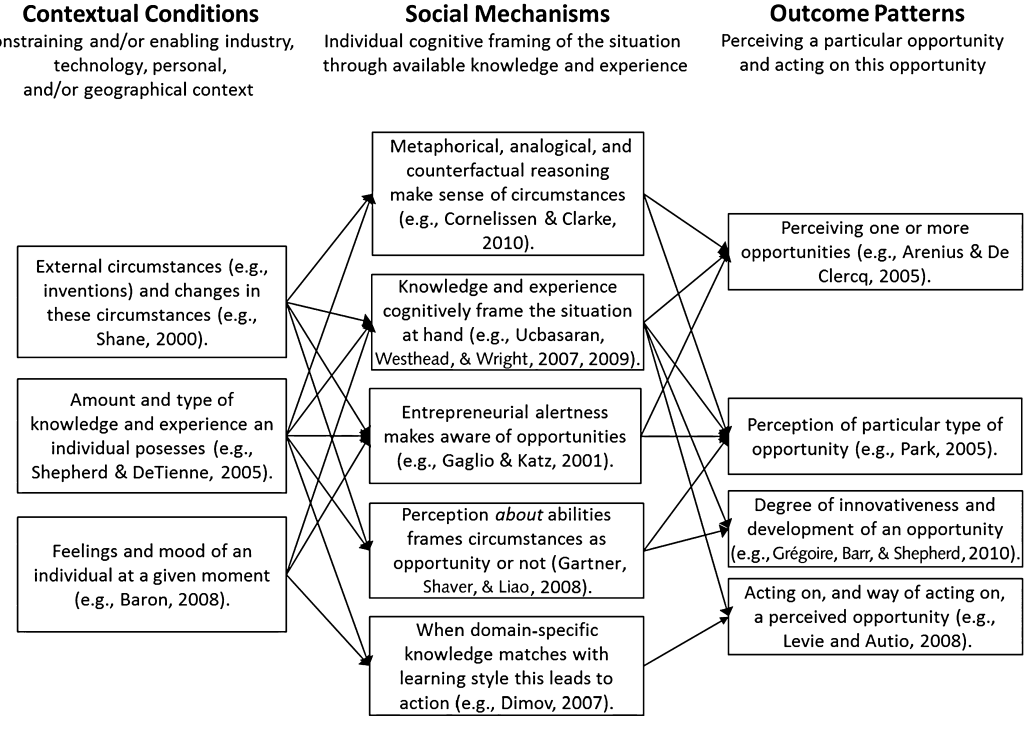
Table 4 provides a summary of frequently observed outcome patterns, social mechanisms, and contextual conditions. The outcome patterns are consistently described in the literature as *opportunity perception* (i.e., opportunity creation, opportunity "spark," opportunity identification, opportunity recognition, and opportunity discovery) and *opportunity exploitation or development* (including opportunity evaluation as the decision to exploit

an opportunity or not). Some studies go beyond opportunity perception and exploitation to examine performance outcomes of the exploited opportunities. The theoretical explanations of these outcome patterns, however, demonstrate substantial variation, including various combinations of all the contextual conditions and social mechanisms. Most mechanisms identified operate at the individual–cognitive level with regard to the outcome of opportunity identification, while mechanisms explaining opportunity development and exploitation are often action-oriented or less often collective in nature. Contextual conditions enable or constrain social mechanisms to operate, and these mechanisms can also influence each other. In the remainder of this section, we present two clusters of outcome patterns, social mechanisms, and contextual conditions identified in our review: the cognitive framing of opportunities at the individual level and the social situatedness of opportunity perception and exploitation.

Individual Cognitive Framing of Opportunities. One of the most discussed mechanisms generating and directing opportunity perception and exploitation (as outcome pattern) is the individual's framing of the situation at hand, in light of existing knowledge and experience (Short, Ketchen, Shook, & Ireland, 2010). Many studies seek to understand this relationship, providing an in-depth understanding of the underlying social mechanisms and contextual conditions. Figure 1 provides an overview of the specific contexts, social mechanisms, and outcome patterns.

Figure 1

Research Synthesis Example 1: Individual Cognitive Framing of Opportunities



The general mechanism-based explanation here is that if an entrepreneur identifies or constructs an opportunity, (s)he most likely perceives and acts upon this opportunity if it is in line with his/her (perceived) prior experience and knowledge. Thus, an important contextual condition is formed by the amount and type of experience and knowledge. A second generic contextual condition is the external circumstances, such as technological inventions and changes in these circumstances, which individuals may frame as opportunities. Within these contextual conditions, a number of different social mechanisms explain the outcome patterns of perceiving one or more opportunities, perceiving particular types of opportunities, the degree of innovativeness and development of these opportunities, and finally whether and how people act upon the perceived opportunity.

Our review serves to identify three social mechanisms within the individual cognitive framing of opportunities. First, the type and amount of knowledge enables or constrains framing the situation at hand as an opportunity. In general, people with entrepreneurial experience are more likely than non-entrepreneurs to frame something as an opportunity (Palich & Bagby, 1995). Higher levels of education and prior knowledge enhance the likelihood of identifying opportunities (Arenius & De Clercq, 2005; Ramos-Rodríguez, Medina-Garrido, Lorenzo-Gómez, & Ruiz-Navarro, 2010) and thus increase the number of opportunities identified (Smith, Matthews, & Schenkel, 2008; Ucbasaran et al., 2007, 2009; Westhead, Ucbasaran, & Wright, 2009) or lead to more innovative ones (Shepherd & DeTienne, 2005), while industry experience makes it more likely that people act upon perceived opportunities and start a venture (Dimov, 2010). More specifically, Shane (2000) showed the existing knowledge of entrepreneurs directs the type of opportunity identified (see also Park, 2005). This mechanism appears to have an optimum level, as too much experience can hinder the entrepreneur in identifying new promising opportunities (Ucbasaran et al., 2009). Beyond perceiving an opportunity, knowledge and experience also appear to direct the way in which opportunities are exploited (Dencker, Gruber, & Shah, 2009). The underlying submechanism—explaining the cognitive framing mechanism—is that prior knowledge and experience facilitate recognizing patterns from snippets of information and "connecting the dots" to ideate, identify, and evaluate a meaningful opportunity (Baron & Ensley, 2006; Grégoire et al., 2010; Van Gelderen, 2010).

The second social mechanism (see Fig. 1) serves to explain that the individual's perception *about* his/her knowledge and abilities is also influential, as studies from a more narrative–constructivist mode point out (Gartner et al., 2008), thus complementing the first mechanism. The third mechanism says that framing the situation at hand in light of existing knowledge and experience (as a mechanism) does not facilitate the process of identifying an opportunity if the situation does not match the entrepreneur's learning style (Dimov, 2007); this suggests that the second and third mechanisms have to operate together. Evidently, other contextual conditions and mechanisms, such as social network structure, also play a role (Arenius & De Clercq, 2005). In fact, the absence of social network structures can hinder the "individual cognitive framing of opportunities" mechanism, as shown in a study of Finnish entrepreneurs whose lack of ties in the foreign market tend to hinder perception of internationalization opportunities, even when they have specific industry knowledge (Kontinen & Ojala, 2011).

After completing the review of empirical papers, we turned to related conceptual papers. These papers provide a number of additional insights, which are not yet or only to a limited extent empirically studied. First, conceptual studies have put forward the additional mechanism of entrepreneurial alertness that explains why some entrepreneurs are more aware of opportunities than others (Baron, 2004; Gaglio & Katz, 2001; Tang,

Kacmar, & Busenitz, 2012). Second, entrepreneurs' reasoning processes, including metaphorical, analogical, and counterfactual reasoning, provide an additional mechanism that serves to explain how entrepreneurs come up with new opportunities (Cornelissen & Clarke, 2010; Gaglio, 2004). Besides these two additional mechanisms, recent theorizing on the role of affect indicates that the feelings and moods of individuals form a contextual condition that influences alertness, experimentation, and framing (Baron, 2008; Baron, Hmieleski, & Henry, 2012).

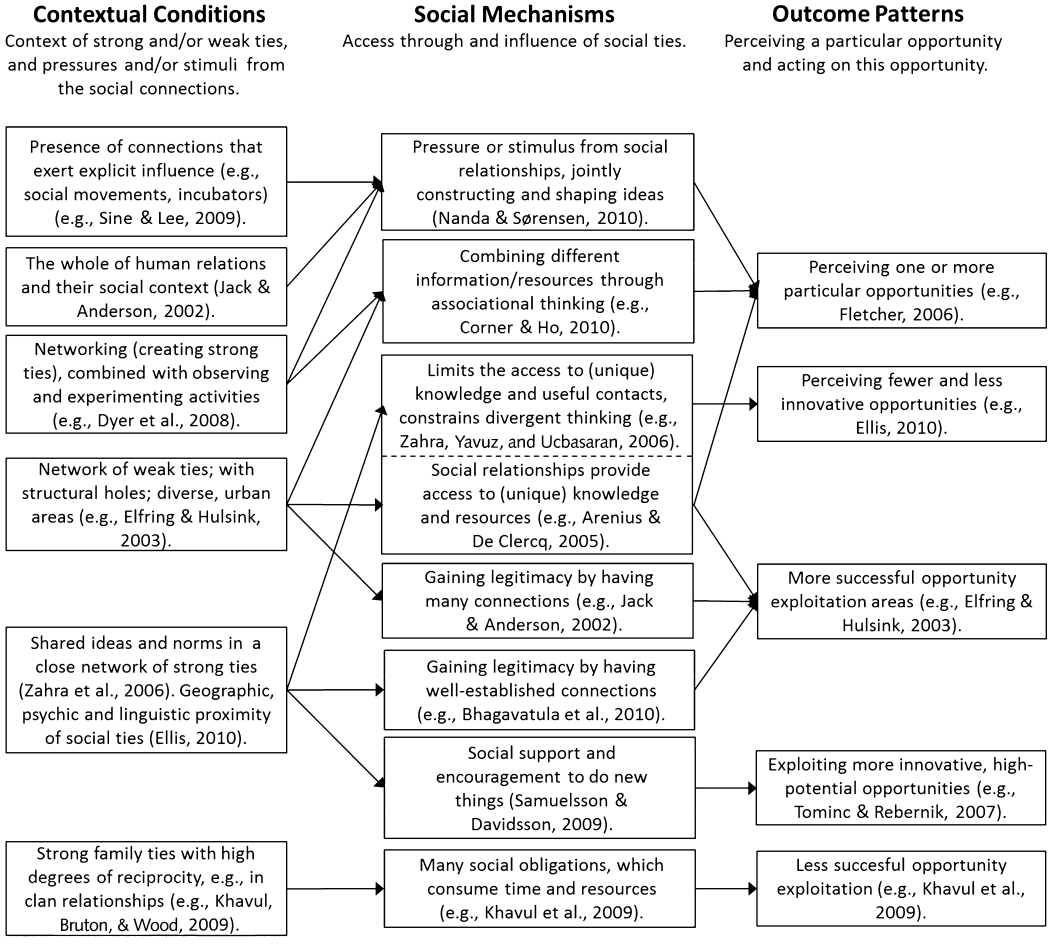
As the next step, we considered whether the social mechanisms identified are (e.g., hierarchical, sequential, or parallel) dependent on each other, redundant or counterfactual, and whether there are likely any unobserved mechanisms (cf. Durand & Vaara, 2009; Hedström & Ylikoski, 2010). With regard to the cluster of mechanisms pertaining to individual cognitive framing of opportunities, Figure 1 lists no counterfactual mechanisms but does display a number of parallel, partly overlapping mechanisms dealing with the amount of knowledge and experience, the perception about this knowledge and experience, and the domain specificity of that knowledge and experience. As indicated by the underlying studies, however, these mechanisms are not sufficient to produce the outcome patterns, but require other mechanisms, such as social mediation. The "perception about one's abilities" (Gartner et al., 2008) may be redundant because most other mechanisms identified in our review do not require that entrepreneurs are aware of their abilities. Further research has to establish whether this is the case.

Socially Situated Opportunity Perception and Exploitation. Many studies show the individual entrepreneur's social embeddedness in a context of weak and/or strong ties mediates the perception of opportunities. We identified multiple social mechanisms basically implying that people by being embedded in a context of social ties get access to new knowledge, ideas, and useful contacts (e.g., Arenius & De Clercq, 2005; Bhagavatula, Elfring, Van Tilburg, & Van de Bunt, 2010; Jack & Anderson, 2002; Ozgen & Baron, 2007). Figure 2 summarizes the details of specific contexts, social mechanisms, and outcome patterns. For instance, through the presence of social connections that exert explicit influence, such as in an incubator program, people can blend new and diverse ideas and obtain access to specialized resources and also get stimulated by others to become more aware of new opportunities, resulting in the perception of one or more opportunities (Cooper & Park, 2008; Stuart & Sorenson, 2003). A study of entrepreneurship in the windmill industry uncovered the same mechanism by showing that social movements co-shape the perception of opportunities and lead people to imagine opportunities of building and operating windmills (Sine & Lee, 2009). In addition, engaging in social contacts may influence opportunity perception; for instance, people interacting with coworkers that can draw on prior entrepreneurial experiences are more likely to perceive entrepreneurial opportunities themselves (Nanda & Sørensen, 2010). Moreover, networking activities of entrepreneurs, in combination with observing and experimenting, enable the mechanism of associational thinking (Dyer, Gregersen, & Christensen, 2008) and serve to jointly construct opportunities by combining and shaping insights, as studies in the narrative research mode particularly emphasize (e.g., Corner & Ho, 2010; Fletcher, 2006). The outcome pattern typically observed here is that (potential) entrepreneurs perceive one or more particular opportunities.

The social network context also affects the outcome pattern of opportunity exploitation. For instance, in a "closed network" involving strong ties, the mechanism of acquiring resources from trusted connections can enable resource acquisition and result in better opportunity exploitation (Bhagavatula et al., 2010). Moreover, such ties can provide a new entrepreneur with the legitimacy of established parties and/or reference

Figure 2

Research Synthesis Example 2: Socially Situated Opportunity Perception and Exploitation



customers (Elfring & Hulsink, 2003; Jack & Anderson, 2002). In addition, the support and encouragement of entrepreneurs' social networks help entrepreneurs gain more confidence to pursue radically new opportunities (Samuelsson & Davidsson, 2009) or growth opportunities (Tominc & Rebernik, 2007).

However, these mechanisms can also hinder opportunity perceptions when shared ideas and norms constrain people in perceiving and exploiting radically new opportunities, as Zahra et al. (2006) showed in a corporate entrepreneurship context. Contextual conditions such as geographic, psychic, and linguistic proximity limit a person's existing network, which reduces the number and variation of opportunities that can be mediated by these social ties (Ellis, 2010). In addition, observations in the African context suggest strong family ties also bring many social obligations with them, which may hinder opportunity exploitation; being exposed to a diversity of strong community ties can counterbalance this effect (Khavul et al., 2009).

As a result, the mechanisms explaining positive effects of network ties (e.g., access to knowledge and resources leading to more opportunities and better exploitation) and those causing negative effects (e.g., cognitive lock-in and limited resource availability) appear to be antagonistic. However, the contexts in which these mechanisms operate may explain the divergent processes and outcomes, as diverse networks provide more and diverse information and resources, while closed networks can create a lock-in effect (see Martinez & Aldrich, 2011). Yet, closed networks may also have positive effects, in particular on opportunity exploitation in a Western context, through trust and resource availability. As there is a large body of empirical studies in this domain (Jack, 2010; Martinez & Aldrich; Stuart & Sorenson, 2007), an evidence-based analysis of the social mechanisms, their conditions, and outcomes can be instrumental in explaining the remaining inconsistencies.

A subsequent review of conceptual work in this area shows that most conceptual arguments are firmly grounded in empirical work and as such in line with our synthesis of empirical studies of socially situated opportunity perception and exploitation. Yet, conceptual work serves to draw a broader picture, theoretically explaining both the positive and negative effects of social networks. For instance, conceptual work has used structuration theory to explain how social network structures both enable and constrain entrepreneurial opportunity perception as well as the agency of individuals to act upon those opportunities (Chiasson & Saunders, 2005; Sarason, Dean, & Dillard, 2006), thus highlighting that the social mechanisms of for instance limiting and providing access can be at work under the very same contextual (network) conditions. Moreover, the entrepreneur's social connections (as a contextual condition) are not stable, but are also subject to active shaping (e.g., Luksha, 2008; Mole & Mole, 2010; Sarason et al.), thus putting forward a "feedback loop" from the perception of an opportunity, via the mechanism of shaping the social connections, to a coevolved social network, which in turn influences opportunity perception and exploitation.

Figure 2 suggests some overlap and/or redundancy among several mechanisms. In particular, the legitimation, resource, and knowledge provision mechanisms appear to cooperate and are thus difficult to disentangle. Possibly these social mechanisms operate in a sequential manner, when legitimacy of the entrepreneur and/or venture is a necessary condition for building trust with and obtaining access to the connection (e.g., a potential investor).

Practice-Oriented Action Principles

This literature synthesis illustrates that the social mechanisms and outcome patterns identified in different streams of literature can be integrated in a mechanism-based framework. We identified three empirically observed mechanisms and two theoretical mechanisms with regard to the directivity of knowledge and experience in perceiving, developing, and exploiting opportunities (see Figure 1). With regard to the in-depth review of socially situated opportunity perception and exploitation, we found seven mechanisms operating in a diversity of contextual conditions (see Figure 2). Table 4 presents an overview of the entire set of prevailing contextual conditions, social mechanisms, and outcome patterns in the literature on entrepreneurial opportunities. The philosophical perspectives adopted in the studies reviewed range from studying opportunities as actualized by individuals and constructed in social relationships and practices (Fletcher, 2006; Gartner et al., 2008; Hjorth, 2007) to opportunities arising from and shaped by technological inventions (e.g., Clarysse, Tartari, & Salter, 2011; Cooper & Park, 2008; Eckhardt & Shane, 2011; Shane, 2000). Nonetheless, social mechanisms such as the type of existing

knowledge and outcome patterns such as opportunity type are consistent. This suggests the research synthesis framework proposed in this paper is largely agnostic to underlying assumptions and serves to build a cumulative understanding of contextual conditions, social mechanisms, and outcome patterns.

As the next step, we can develop practice-oriented products from this synthesis. Multiple studies have developed such practice-oriented products, for instance by codifying entrepreneurial principles for action (see Frese et al., 2012) or by developing design principles that are grounded in the available research evidence (e.g., Denyer et al., 2008). In the particular format proposed by Denyer et al., these design principles draw on a context–intervention–mechanism–outcome format, in which explicitly the intervention or action is described. In our research synthesis framework, the entrepreneurial action domain is captured by describing the boundaries of these actions in terms of contextual conditions, social mechanisms, and outcome patterns. As such, highly idiosyncratic entrepreneurial actions within these (typically rather broad) boundaries are likely to be more effective in producing particular outcome patterns than those who fail to acknowledge these boundaries. Consequently, because the action space is specified, one can develop specific action principles for practitioners such as entrepreneurs, policy makers, advisors, or educators. To give an impression of what such a practical end product of a mechanism-based synthesis looks like, we have transformed the findings with regard to "individual cognitive framing of opportunities" and "socially situated opportunity perception and exploitation" into a set of entrepreneur-focused action principles displayed in Table 5. Moreover, this table also provides some potential actions based on these principles, describing ways to trigger the social mechanism and/or change contextual conditions in order to influence the outcome pattern. Overall, these action principles are evidence-based, in the sense that they are grounded in our research synthesis, but are not yet tested as such by practitioners in a specific context; in this respect, Denyer et al. have argued that the most powerful action principles are grounded in the available research evidence as well as extensively field tested in practice.

Similarly, other context–mechanism–outcome combinations can be transformed into principles for action, pointing at ways to adapt contextual factors or ways to establish or trigger the relevant mechanisms. Previous work on evidence-based management has not only described in detail how such principles for action can be codified, but has also demonstrated that well-specified and field-tested principles need to incorporate the pragmatic and emergent knowledge from practitioners (Van Burg et al., 2008; Van de Ven & Johnson, 2006). In this respect, the research synthesis approach presented in this paper merely constitutes a first step toward integrating actionable insights from very diverse research modes into context-specific principles that inform evidence-based actions.

Discussion

Entrepreneurship theorizing currently is subject to a debate between highly different philosophical positions, for instance in the discourse on the ontology and epistemology of opportunities (Short et al., 2010). To conceptually reconcile the two positions in this debate, McMullen and Shepherd (2006) proposed a focus on entrepreneurial action that would make ontological assumptions less important. Our argument in this paper provides an important complement to McMullen and Shepherd's proposal. The research

Table 5

Examples of Action Principles Based on the Mechanism-Based Research Synthesis

Cluster	Action principle	Potential actions
Individual cognitive framing of opportunities	Whether you will perceive *and* act upon an entrepreneurial opportunity (OP) depends to a large extent on external circumstances as well as the experiences, competences, and resources you are bringing to the table (CC) because these conditions: — enable/constrain drawing on your knowledge and experiences to frame the opportunity (SM); — facilitate/limit using methods like metaphorical, analogical, and counterfactual reasoning (SM); — facilitate/limit entrepreneurial alertness (SM); — influence a positive/negative perception of your own abilities (SM); — determine the domain specificity of your knowledge (SM).	Based upon this principle, the following specific actions may foster your ability to perceive *and* act upon an opportunity: — acquiring new experiences, competences, and knowledge; — training your skill in using metaphorical, analogical, and counterfactual reasoning.
Socially situated opportunity perception and exploitation	Whether you will perceive one or more (innovative) opportunities (OP) depends partly on the diversity and strength of your social relationships as well as your networking behavior (CC) by way of: — giving (no) pressure and stimuli (SM); — providing (or in case of a less diverse network: limiting) access to knowledge and resources (SM); — facilitating/limiting associational thinking to connect different information/resources from these ties (SM).	Based upon this principle, the following specific actions likely foster your perception of one or more (innovative) opportunities: — creating awareness of the structure of your network and its limits; — broadening your network, to include ties that enrich this network; — stimulating associational thinking, for example by exposing yourself to novel experiences and ideas.
	The (lack of) success of your efforts to exploit opportunities (OP) depends to large extent on the diversity, proximity, and family dependence of your network (CC), as these aspects of your network: — enhance/limit access to knowledge and contacts (SM); — do (not) provide legitimacy (SM); — provide a low/high level of social support and encouragement (SM); — create few/many social obligations (SM).	Based upon this principle, the following specific actions may foster the success of your efforts to exploit an opportunity: — becoming aware of the network structure and its limits; — developing strong ties with relevant partners; — develop an appropriate mix of strong and weak ties; — limiting the effect of social obligations, e.g., by creating some physical distance to family and friends in your network.

CC, contextual conditions; OP, outcome pattern; SM, social mechanism.

synthesis framework developed in this paper serves to specify outcome patterns in relation to the social mechanisms and contextual conditions influencing these patterns.

Research Implications

An important benefit of the research synthesis framework presented in this paper is that it facilitates the synthesis of dispersed and divergent streams of literature on entrepreneurship. This framework does not imply a particular epistemological stance, such as a narrative or positivist one. If any, then the epistemological perspective adopted in this paper is rooted in a pragmatic view of the world that acknowledges the complementary nature of narrative, positivist, and design knowledge (Gross, 2009; Romme, 2003).

Our proposal to develop a professional practice of research synthesis may also serve to avoid a stalemate in the current disagreement on key paradigmatic issues among

entrepreneurship researchers (Davidsson, 2008; Ireland et al., 2005). Rather than engaging in a paradigmatic debate that possibly results in the kind of "paradigm wars" that have raged elsewhere in management studies (e.g., Denison, 1996), a broad framework for research synthesis will be instrumental in spurring and facilitating a discourse on actionable insights dealing with "what," "why," "when," and "how" entrepreneurial ideas, strategies, practices, and actions (do not) work. In particular, we advocate to build mechanism-based explanations for entrepreneurship phenomena. Entrepreneurship studies need to go beyond establishing mere relationships, by exploring and uncovering the social mechanisms that explain why variables are related to each other, as recent calls for mechanism-based explanations of entrepreneurship phenomena also imply (Aldrich, 2010; Frese et al., 2012; McKelvie & Wiklund, 2010; Sarasvathy et al., 2013; Wiklund & Shepherd, 2011). A focus on social mechanisms not only serves to transcend paradigmatic differences, but also creates detailed explanations by identifying mechanisms and contrasting with counterfactuals. For instance, we observed similar mechanisms at work in a diversity of contexts in which an entrepreneur's knowledge and experience affect opportunity identification and exploitation. The literature in this area, although highly diverse in terms of its ontological and epistemological assumptions, is thus starting to converge toward a common understanding of how particular entrepreneurial contexts through certain social mechanisms generate particular outcome patterns.

Our framework also advances the literature on methods of research synthesis in evidence-based management. Early pioneers in this area have argued for a systematic collection of evidence regarding the effect of interventions in particular management contexts (Tranfield et al., 2003). Later work has introduced the notion of mechanisms, as an explanation of the effect of an intervention in a particular context (e.g., Denyer et al., 2008; Rousseau, 2012; Rousseau et al., 2008; Van Aken, 2004), mostly drawing on the critical realist synthesis approach developed by Pawson (2006). Our study highlights that the notion of mechanisms is central to overcome the fragmented nature of the field (see Denyer et al., 2008), and further develops this notion by adopting a pragmatic perspective on mechanisms that avoids the restrictive assumptions of (critical) realism, which makes it widely acceptable.

Moreover, and more importantly, the synthesis approach developed in this paper specifies how detailed mechanism-based explanations can be created by qualitative assessments of different types of mechanisms and their hierarchy, dependency, and sequence, including an analysis of rival mechanisms or counterfactuals. Our synthesis also shows the importance of context-dependency of those mechanisms and thus provides an approach that responds to repeated calls for a better inclusion of context in theorizing and researching entrepreneurship (e.g., Welter, 2011; Zahra, 2007). A key task of any research synthesis is to take stock of what the existing body of knowledge tells about the context dependency of entrepreneurial action, thus informing a broader audience about why and how particular mechanisms produce an outcome in a particular context and not in others. Finally, the example of the synthesis of the "entrepreneurial opportunity" literature demonstrates that mechanism-based synthesis can effectively combine fragmented findings arising from quantitative studies of cause–effect relations with those arising from studies using qualitative data to assess the impact of mechanisms and contexts.

Practical Implications

The research synthesis perspective developed in this paper serves to bridge the so-called "relevance gap" between mainstream entrepreneurship science and entrepreneurial practice. In search of a research domain and a strong theory, entrepreneurship researchers have increasingly moved away from practically relevant questions (Zahra & Wright,

2011). This has led to an increased awareness of the scientific rationale of entrepreneurship research (Shane & Venkataraman, 2000), but also reinforced the boundaries between the science and practice of entrepreneurship and provoked an ongoing debate on epistemic differences. As our synthesis of the entrepreneurial opportunity literature illustrates, few studies adopt a pragmatic and actionable orientation with a clear focus on the processes of practicing entrepreneurs.

Meanwhile, policy fashions rather than empirical evidence or well-established theory tend to influence entrepreneurial behavior and public policy (Bower, 2003; Mowery & Ziedonis, 2004; Weick, 2001). Moreover, previous attempts to develop practice-oriented design recommendations from "thick" case descriptions provide only a partial view of policy (actions and interventions) or refrain from specifying the specific contexts of these recommendations. This makes it rather difficult to formulate recommendations that bear contextual validity as well as synthesize scholarly insights (Welter, 2011; Zahra, 2007). In other words, there is a major risk that many entrepreneurs, investors, and other stakeholders in entrepreneurial initiatives and processes miss out on key scholarly insights, as a solid basis from which adequate strategies, policies, and measures can be developed.

In this respect, evidence-based insights codified in terms of contextual conditions, key social mechanisms, and outcome patterns can inform and support entrepreneurs and their stakeholders in the process of designing and developing new ventures. Although this article may not be read by many practicing entrepreneurs, its results—and future work using such an approach—are of direct relevance for those who want to take stock of the existing knowledge base with the aim to learn, educate, and support evidence-based entrepreneurship. In that sense, the contextual conditions and social mechanisms identified (e.g., in our synthesis of the entrepreneurial opportunity literature) do not provide a universal blueprint but evidence-based insights that can easily be transformed into context-specific principles for action, as demonstrated in Table 5. For instance, the research synthesis conducted in this paper demonstrates legitimacy creation, cognitive lock-in, information and resource gathering, as well as social obligations are key mechanisms explaining the highly diverse effects of social ties. Entrepreneurs who become aware of these mechanisms are likely to become more effective in social networking efforts, for example, by searching for variety, engaging in deliberate efforts to reshape their network structure, and so forth.

Limitations and Further Research

This paper presents a mechanism-based research synthesis approach that is applied to the literature on entrepreneurial opportunity formation, exploration, and exploitation. We systematically collected the relevant papers on this topic using a list of journals, but both the article collection as well as the presentation of the synthesis were limited. A proper systematic review of the existing body of knowledge should start by collecting all research output—including working papers, books, and monographs—and then explain how the number of documents was reduced according to clear and reproducible guidelines. Furthermore, in this paper, we were only able to present a snippet of the synthesis and the assumptions of the studies (cf. Dimov, 2011). It is up to future work in this area to develop a full-fledged systematic database of research documents and research synthesis, including collecting insights from other relevant fields, and to do this exercise for other relevant topics in the entrepreneurship literature as well.

Moreover, we merely touched on the analysis of the dependency and redundancy of the social mechanisms identified. A formal and more detailed analysis of dependency,

redundancy, counterfactuals, and unobserved mechanisms (cf. Durand & Vaara, 2009) is a very promising route for further research, which may also serve to identify new mechanisms and areas of research.

Finally, future research will need to focus on systematically distinguishing different types of mechanisms—ranging from micro to macro. For instance, Hedström and Swedberg (1996) refer to situational, action formation, and transformational mechanisms; alternatively, Gross (2009) distinguishes individual–cognitive, individual–behavioral, and collectively enacted mechanisms. Distinguishing these different types of mechanisms will serve to identify the social levels at which and contexts in which practitioners can intervene.

Conclusion

Stevenson and Jarillo (1990, p. 21) advocated researching the "how" rather than the "why" and "what" of entrepreneurship. In spite of the impact of this foundational work, most research in entrepreneurship remains focused on the "why" and "what." Many researchers acknowledge the relevance of "how" questions, but run into major difficulties when they try to provide answers to the practical challenges faced by entrepreneurs, investors, and other stakeholders (Bygrave, 2007). We have argued positivist knowledge (on why and what issues) can be complementary to narrative and actionable knowledge (on how issues), but only if these highly different kinds of knowledge and research are effectively combined. Drawing on the systematic review and research synthesis literature, we presented a mechanism-based framework that serves to synthesize research findings in terms of their outcome patterns, contextual conditions, and social mechanisms. Subsequently, research findings on opportunity discovery and creation were reviewed and synthesized. This synthesis example demonstrates that research synthesis does not substitute theory development within the positivist, narrative, or design modes in entrepreneurship research, but provides a framework for developing an evidence-based and actionable overview of what we know about entrepreneurship.

REFERENCES

Aldrich, H.E. (2010). Beam me up, Scott(ie)! Institutional theorists' struggles with the emergent nature of entrepreneurship. *Research in the Sociology of Work*, *21*, 329–364.

Aldrich, H.E. & Fiol, C.M. (1994). Fools rush in? The institutional context of industry creation. *Academy of Management Review*, *19*(4), 645–670.

Aldrich, H.E. & Ruef, M. (2006). *Organizations evolving*. London: Sage Publications.

Alvarez, S.A. & Barney, J.B. (2007). Discovery and creation: Alternative theories of entrepreneurial action. *Strategic Entrepreneurship Journal*, *1*(1–2), 11–26.

Alvarez, S.A. & Barney, J.B. (2010). Entrepreneurship and epistemology: The philosophical underpinnings of the study of entrepreneurial opportunities. *Academy of Management Annals*, *4*, 557–583.

Alvarez, S.A., Barney, J.B., & Young, S.L. (2010). Debates in entrepreneurship: Opportunity formation and implications for the field of entrepreneurship. In Z.J. Acs & D.B. Audretsch (Eds.), *Handbook of entrepreneurship research* (Vol. 5, pp. 23–45). New York: Springer.

Anderson, P.J.J., Blatt, R., Christianson, M.K., Grant, A.M., Marquis, C., Neuman, E.J., et al. (2006). Understanding mechanisms in organizational research: Reflections from a collective journey. *Journal of Management Inquiry*, *15*(2), 102–113.

Arenius, P. & De Clercq, D. (2005). A network-based approach on opportunity recognition. *Small Business Economics*, *24*(3), 249–265.

Argyris, C., Putnam, R., & McLain Smith, D. (1985). *Action science*. London: Jossey-Bass.

Baron, R.A. (2004). The cognitive perspective: A valuable tool for answering entrepreneurship's basic "why" questions. *Journal of Business Venturing*, *19*(2), 221–239.

Baron, R.A. (2008). The role of affect in the entrepreneurial process. *Academy of Management Review*, *33*(2), 328–340.

Baron, R.A. & Ensley, M.D. (2006). Opportunity recognition as the detection of meaningful patterns: Evidence from comparisons of novice and experienced entrepreneurs. *Management Science*, *52*(9), 1331–1344.

Baron, R.A., Hmieleski, K.M., & Henry, R.A. (2012). Entrepreneurs' dispositional positive affect: The potential benefits—and potential costs—of being "up." *Journal of Business Venturing*, *27*(3), 310–324.

Battilana, J., Leca, B., & Boxenbaum, E. (2009). How actors change institutions: Towards a theory of institutional entrepreneurship. *Academy of Management Annals*, *3*(1), 65–107.

Berglund, H. (2007). Opportunities as existing and created: A study of entrepreneurs in the Swedish mobile internet industry. *Journal of Enterprising Culture*, *15*(3), 243–273.

Bhagavatula, S., Elfring, T., van Tilburg, A., & van de Bunt, G.G. (2010). How social and human capital influence opportunity recognition and resource mobilization in India's handloom industry. *Journal of Business Venturing*, *25*(3), 245–260.

Bhaskar, R. (1978). *A realist theory of science*. Hassocks, U.K.: Harvester Press.

Bower, D.J. (2003). Business model fashion and the academic spinout firm. *R&D Management*, *33*(2), 97–106.

Briner, R. & Denyer, D. (2012). Evidence synthesis as a scholarship and practice tool. In D.M. Rousseau (Ed.), *Handbook of evidence-based management: Companies, classrooms, and research* (pp. 112–129). Oxford: Oxford University Press.

Busenitz, L.W., Moesel, D.D., Fiet, J.O., & Barney, J.B. (1997). The framing of perceptions of fairness in the relationship between venture capitalists and new venture teams. *Entrepreneurship Theory and Practice*, *21*(3), 5–21.

Bygrave, W.D. (2007). The entrepreneurship paradigm (I) revisited. In H. Neergaard & J. Parm Ulhøi (Eds.), *Handbook of qualitative research methods in entrepreneurship* (pp. 17–48). Cheltenham, U.K.: Edward Elgar Publishing.

Cairns, G. & Śliwa, M. (2008). The implications of Aristotle's phronēsis for organizational inquiry. In D. Barry & H. Hansen (Eds.), *The Sage handbook of new approaches in management and organization* (pp. 318–328). London: Sage Publications.

Chia, R. (1996). Teaching paradigm shifting in management education: University business schools and the entrepreneurial imagination. *Journal of Management Studies*, *33*(4), 409–428.

Chiasson, M. & Saunders, C. (2005). Reconciling diverse approaches to opportunity research using the structuration theory. *Journal of Business Venturing*, *20*(6), 747–767.

Chiles, T.H., Bluedorn, A.C., & Gupta, V.K. (2007). Beyond creative destruction and entrepreneurial discovery: A radical Austrian approach to entrepreneurship. *Organization Studies*, *28*(4), 467–493.

Clarysse, B., Tartari, V., & Salter, A. (2011). The impact of entrepreneurial capacity, experience and organizational support on academic entrepreneurship. *Research Policy*, *40*(8), 1084–1093.

Cooper, S.Y. & Park, J.S. (2008). The impact of "incubator" organizations on opportunity recognition and technology innovation in new, entrepreneurial high-technology ventures. *International Small Business Journal*, *26*(1), 27–56.

Corley, K.G. & Gioia, D.A. (2011). Building theory about theory building: What constitutes a theoretical contribution? *Academy of Management Review*, *36*(1), 12–32.

Cornelissen, J.P. & Clarke, J.S. (2010). Imagining and rationalizing opportunities: Inductive reasoning and the creation and justification of new ventures. *Academy of Management Review*, *35*(4), 539–557.

Corner, P.D. & Ho, M. (2010). How opportunities develop in social entrepreneurship. *Entrepreneurship Theory and Practice*, *34*(4), 635–659.

Coviello, N.E. & Jones, M.V. (2004). Methodological issues in international entrepreneurship research. *Journal of Business Venturing*, *19*(4), 485–508.

Cross, N. (2001). Designerly ways of knowing: Design discipline versus design science. *Design Issues*, *17*(3), 49–55.

Davidsson, P. (2003). The domain of entrepreneurship research: Some suggestions. *Advances in Entrepreneurship, Firm Emergence and Growth*, *6*, 315–372.

Davidsson, P. (2008). *The entrepreneurship research challenge*. Cheltenham, U.K.: Edward Elgar.

Davis, G.F. & Marquis, C. (2005). Prospects for organization theory in the early twenty-first century: Institutional fields and mechanisms. *Organization Science*, *16*(4), 332–343.

Delmar, F. & Shane, S. (2003). Does business planning facilitate the development of new ventures? *Strategic Management Journal*, *24*(12), 1165–1185.

Dencker, J.C., Gruber, M., & Shah, S.K. (2009). Individual and opportunity factors influencing job creation in new firms. *Academy of Management Journal*, *52*(6), 1125–1147.

Denison, D.R. (1996). What is the difference between organizational culture and organizational climate? A native's point of view on a decade of paradigm wars. *Academy of Management Review*, *21*(3), 619–654.

Denyer, D. & Tranfield, D. (2006). Using qualitative research synthesis to build an actionable knowledge base. *Management Decision*, *44*(2), 213–227.

Denyer, D., Tranfield, D., & Van Aken, J.E. (2008). Developing design propositions through research synthesis. *Organization Studies*, *29*(3), 393–413.

Dew, N., Read, S., Sarasvathy, S.D., & Wiltbank, R. (2009). Effectual versus predictive logics in entrepreneurial decision-making: Differences between experts and novices. *Journal of Business Venturing*, *24*(4), 287–309.

Dewey, J. (1929). *The quest for certainty: A study of the relation of knowledge and action*. New York: Minton, Balch & Company. Reprinted in: Dewey, J. (1984). *The later works: 1925–1953, volume 4: 1929* (pp. 1–254). Carbondale, IL: Southern Illinois University Press.

DiMaggio, P.J. & Powell, W.W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, *48*(2), 147–160.

Dimov, D. (2007). From opportunity insight to opportunity intention: The importance of person-situation learning match. *Entrepreneurship Theory and Practice*, *31*(4), 561–583.

Dimov, D. (2010). Nascent entrepreneurs and venture emergence: Opportunity confidence, human capital, and early planning. *Journal of Management Studies*, *47*(6), 1123–1153.

Dimov, D. (2011). Grappling with the unbearable elusiveness of entrepreneurial opportunities. *Entrepreneurship Theory and Practice*, *35*(1), 57–81.

Downing, S. (2005). The social construction of entrepreneurship: Narrative and dramatic processes in the coproduction of organizations and identities. *Entrepreneurship Theory and Practice*, *29*(2), 185–204.

Durand, R. & Vaara, E. (2009). Causation, counterfactuals, and competitive advantage. *Strategic Management Journal*, *30*(12), 1245–1264.

Dyer, J.H., Gregersen, H.B., & Christensen, C. (2008). Entrepreneur behaviors, opportunity recognition, and the origins of innovative ventures. *Strategic Entrepreneurship Journal*, *2*(4), 317–338.

Eckhardt, J.T. & Shane, S.A. (2011). Industry changes in technology and complementary assets and the creation of high-growth firms. *Journal of Business Venturing*, *26*(4), 412–430.

Elfring, T. & Hulsink, W. (2003). Networks in entrepreneurship: The case of high-technology firms. *Small Business Economics*, *21*(4), 409–422.

Ellis, P.D. (2010). Social ties and international entrepreneurship: Opportunities and constraints affecting firm internationalization. *Journal of International Business Studies*, *42*(1), 99–127.

Fletcher, D.E. (2006). Entrepreneurial processes and the social construction of opportunity. *Entrepreneurship & Regional Development*, *18*(5), 421–440.

Flyvbjerg, B. (2001). *Making social science matter: Why social inquiry fails and how it can succeed again*. Cambridge: Cambridge University Press.

Foss, N.J., Klein, P.G., Kor, Y.Y., & Mahoney, J.T. (2008). Entrepreneurship, subjectivism, and the resource-based view: Toward a new synthesis. *Strategic Entrepreneurship Journal*, *2*(1), 73–94.

Frese, M., Bausch, A., Schmidt, P., Strauch, A., & Kabst, R. (2012). Evidence-based entrepreneurship: Cumulative science, action principles, and bridging the gap between science and practice. *Foundations and Trends in Entrepreneurship*, *8*, 1–62.

Gaglio, C.M. (2004). The role of mental simulations and counterfactual thinking in the opportunity identification process. *Entrepreneurship Theory and Practice*, *28*(6), 533–552.

Gaglio, C.M. & Katz, J.A. (2001). The psychological basis of opportunity identification: Entrepreneurial alertness. *Small Business Economics*, *16*(2), 95–111.

Gartner, W.B. (2007a). Is there an elephant in entrepreneurship? Blind assumptions in theory development. *Entrepreneurship Theory and Practice*, *25*(4), 27–39.

Gartner, W.B. (2007b). Entrepreneurial narrative and a science of the imagination. *Journal of Business Venturing*, *22*(5), 613–627.

Gartner, W.B., Shaver, K.G., & Liao, J. (2008). Opportunities as attributions: Categorizing strategic issues from an attributional perspective. *Strategic Entrepreneurship Journal*, *2*(4), 301–315.

Garud, R., Hardy, C., & Maguire, S. (2007). Institutional entrepreneurship as embedded agency: An introduction to the special issue. *Organization Studies*, *28*(7), 957–969.

Garud, R. & Karnøe, P. (2003). Bricolage versus breakthrough: Distributed and embedded agency in technology entrepreneurship. *Research Policy*, *32*, 277–300.

Geyskens, I., Krishnan, R., Steenkamp, J.B.E.M., & Cunha, P.V. (2009). A review and evaluation of meta-analysis practices in management research. *Journal of Management*, *35*(2), 393–419.

Giddens, A. (1984). *The constitution of society*. Cambridge, U.K.: Polity Press.

Grégoire, D.A., Barr, P.S., & Shepherd, D.A. (2010). Cognitive processes of opportunity recognition: The role of structural alignment. *Organization Science*, *21*(2), 413–431.

Gross, N. (2009). A pragmatist theory of social mechanisms. *American Sociological Review*, *74*(3), 358–379.

Haber, S. & Reichel, A. (2007). The cumulative nature of the entrepreneurial process: The contribution of human capital, planning and environment resources to small venture performance. *Journal of Business Venturing*, *22*(1), 119–145.

Hedström, P. & Swedberg, R. (1996). Social mechanisms. *Acta Sociologica*, *39*(3), 281–308.

Hedström, P. & Ylikoski, P. (2010). Causal mechanisms in the social sciences. *Annual Review of Sociology*, *36*(1), 49–67.

Hildebrand, D.L. (2003). *Beyond realism and antirealism: John Dewey and the neopragmatists*. Nashville, TN: Vanderbilt University Press.

Hjorth, D. (2007). Lessons from lago: Narrating the event of entrepreneurship. *Journal of Business Venturing*, *22*(5), 712–732.

Hjorth, D. & Steyaert, C. (2005). *Narrative and discursive approaches in entrepreneurship: A second movements in entrepreneurship book*. Cheltenham, U.K.: Edward Elgar Publishing.

Hoskisson, R.E., Covin, J., Volberda, H.W., & Johnson, R.A. (2011). Revitalizing entrepreneurship: The search for new research opportunities. *Journal of Management Studies*, *48*(6), 1141–1168.

Ireland, R.D., Webb, J.W., & Coombs, J.E. (2005). Theory and methodology in entrepreneurship research. In D.J. Ketchen, Jr., & D.D. Bergh (Eds.), *Research Methodology in Strategy and Management* (pp. 111–141). Oxford: Elsevier.

Jack, S.L. (2010). Approaches to studying networks: Implications and outcomes. *Journal of Business Venturing*, *25*(1), 120–137.

Jack, S.L. & Anderson, A.R. (2002). The effects of embeddedness on the entrepreneurial process. *Journal of Business Venturing*, *17*(5), 467–487.

Katz, J. & Gartner, W.B. (1988). Properties of emerging organizations. *Academy of Management Review*, *13*(3), 429–441.

Khavul, S., Bruton, G.D., & Wood, E. (2009). Informal family business in Africa. *Entrepreneurship Theory and Practice*, *33*(6), 1219–1238.

Kontinen, T. & Ojala, A. (2011). International opportunity recognition among small and medium-sized family firms. *Journal of Small Business Management*, *49*(3), 490–514.

Kuorikoski, J. & Pöyhönen, S. (2012). Looping kinds and social mechanisms. *Sociological Theory*, *30*(3), 187–205.

Kwan, K.-M. & Tsang, E.W.K. (2001). Realism and constructivism in strategy research: A critical realist response to Mir and Watson. *Strategic Management Journal*, *22*(12), 1163–1168.

Lawson, T. (1997). *Economics and reality*. London: Routledge.

Leitch, C.M., Hill, F.M., & Harrison, R.T. (2010). The philosophy and practice of interpretivist research in entrepreneurship. *Organizational Research Methods*, *13*(1), 67–84.

Levie, J. & Autio, E. (2008). A theoretical grounding and test of the GEM model. *Small Business Economics*, *31*(3), 235–263.

Luksha, P. (2008). Niche construction: The process of opportunity creation in the environment. *Strategic Entrepreneurship Journal*, *2*(4), 269–283.

Martinez, M.A. & Aldrich, H.E. (2011). Networking strategies for entrepreneurs: Balancing cohesion and diversity. *International Journal of Entrepreneurial Behaviour & Research*, *17*(1), 7–38.

McKelvie, A. & Wiklund, J. (2010). Advancing firm growth research: A focus on growth mode instead of growth rate. *Entrepreneurship Theory and Practice*, *34*(2), 261–288.

McMullen, J.S. & Shepherd, D.A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review*, *31*(1), 132–152.

Merton, R.K. (1968). *Social theory and social structure*. New York: Free Press.

Miller, K.D. & Tsang, E.W.K. (2011). Testing management theories: Critical realist philosophy and research methods. *Strategic Management Journal*, *32*(2), 139–158.

Mole, K.F. & Mole, M. (2010). Entrepreneurship as the structuration of individual and opportunity: A response using a critical realist perspective: Comment on Sarason, Dean and Dillard. *Journal of Business Venturing*, *25*(2), 230–237.

Mowery, D.C.N. & Ziedonis, A.A. (2004). *Ivory tower and industrial innovation: University-industry technology transfer before and after the Bayh-Dole Act*. Stanford, CA: Stanford Business Books.

Nanda, R. & Sørensen, J.B. (2010). Workplace peers and entrepreneurship. *Management Science*, *56*(7), 1116–1126.

Nicolaou, N. & Birley, S. (2003). Social networks in organizational emergence: The university spinout phenomenon. *Management Science*, *49*(12), 1702–1725.

Ozgen, E. & Baron, R.A. (2007). Social sources of information in opportunity recognition: Effects of mentors, industry networks, and professional forums. *Journal of Business Venturing*, *22*(2), 174–192.

Pajunen, K. (2008). The nature of organizational mechanisms. *Organization Studies*, *29*(11), 1449–1468.

Palich, L.E. & Bagby, D.R. (1995). Using cognitive theory to explain entrepreneurial risk-taking: Challenging conventional wisdom. *Journal of Business Venturing*, *10*(6), 425–438.

Park, J.S. (2005). Opportunity recognition and product innovation in entrepreneurial hi-tech start-ups: A new perspective and supporting case study. *Technovation*, *25*(7), 739–752.

Pawson, R. (2000). Middle-range realism. *Archives Européennes de Sociologie*, *41*(2), 283–325.

Pawson, R. (2002). Evidence-based policy: The promise of "realist synthesis." *Evaluation*, *8*(3), 340–358.

Pawson, R. (2006). *Evidence-based policy: A realist perspective*. London: Sage Publications.

Pentland, B.T. (1999). Building process theory with narrative: From description to explanation. *Academy of Management Review*, *24*(4), 711–724.

Ramos-Rodríguez, A.-R., Medina-Garrido, J.-A., Lorenzo-Gómez, J.-D., & Ruiz-Navarro, J. (2010). What you know or who you know? The role of intellectual and social capital in opportunity recognition. *International Small Business Journal*, *28*(6), 566–582.

Reed, M. (2008). Exploring Plato's cave: Critical realism in the study of organization and management. In D. Barry & H. Hansen (Eds.), *The Sage handbook of new approaches in management and organization* (pp. 68–78). London: Sage Publications.

Rindova, V., Barry, D., & Ketchen, D.J. (2009). Entrepreneuring as emancipation. *Academy of Management Review*, *34*(3), 477–491.

Romme, A.G.L. (2003). Making a difference: Organization as design. *Organization Science*, *14*(5), 558–573.

Rousseau, D.M. (2006). Is there such a thing as "evidence-based management"? *Academy of Management Review*, *31*(2), 256–269.

Rousseau, D.M. (2012). Designing a better business school: Channelling Herbert Simon, addressing the critics, and developing actionable knowledge for professionalizing managers. *Journal of Management Studies*, *49*(3), 600–618.

Rousseau, D.M., Manning, J., & Denyer, D. (2008). Evidence in management and organizational science: Assembling the field's full weight of scientific knowledge through syntheses. *Academy of Management Annals*, *2*(1), 475–515.

Samuelsson, M. & Davidsson, P. (2009). Does venture opportunity variation matter? Investigating systematic process differences between innovative and imitative new ventures. *Small Business Economics*, *33*(2), 229–255.

Sarason, Y., Dean, T., & Dillard, J.F. (2006). Entrepreneurship as the nexus of individual and opportunity: A structuration view. *Journal of Business Venturing*, *21*(3), 286–305.

Sarasvathy, S.D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, *26*(2), 243–263.

Sarasvathy, S.D. (2003). Entrepreneurship as a science of the artificial. *Journal of Economic Psychology*, *24*, 203–220.

Sarasvathy, S.D. (2004). Making it happen: Beyond theories of the firm to theories of firm design. *Entrepreneurship Theory and Practice*, *28*(6), 519–531.

Sarasvathy, S.D. & Dew, N. (2005). New market creation through transformation. *Journal of Evolutionary Economics*, *15*(5), 533–565.

Sarasvathy, S.D., Dew, N., Read, S., & Wiltbank, R. (2008). Designing organizations that design environments: Lessons from entrepreneurial expertise. *Organization Studies*, *29*(3), 331–350.

Sarasvathy, S.D., Forster, W.R., & Ramesh, A. (2013). From Goldilocks to Gump: A research agenda for entrepreneurial mechanisms design. *Academy of Management Best Paper Proceedings*, forthcoming.

Sarasvathy, S.D. & Venkataraman, S. (2011). Entrepreneurship as method: Open questions for an entrepreneurial future. *Entrepreneurship Theory and Practice*, *35*(1), 113–135.

Sayer, R.A. (2000). *Realism and social science*. London: Sage Publications.

Schumpeter, J. (1911). *Theorie der wirtschaftlichen Entwicklung*. Leipzig, Germany: Duncker & Humblot.

Schumpeter, J. (1942). *Capitalism, socialism and democracy*. New York: Harper and Brothers.

Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, *11*(4), 448–469.

Shane, S. (2001). Technological opportunities and new firm creation. *Management Science*, *47*(2), 205–220.

Shane, S. (2003). *A general theory of entrepreneurship: The individual opportunity nexus*. Cheltenham, U.K.: Edward Elgar.

Shane, S. (2012). Reflections on the 2010 AMR decade award: Delivering on the promise of entrepreneurship as a field of research. *Academy of Management Review*, *37*(1), 10–20.

Shane, S. & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, *25*(1), 217–226.

Shepherd, D.A. & DeTienne, D.R. (2005). Prior knowledge, potential financial reward, and opportunity identification. *Entrepreneurship Theory and Practice*, *29*(1), 91–112.

Short, J.C., Ketchen, D.J., Shook, C.L., & Ireland, R.D. (2010). The concept of "opportunity" in entrepreneurship research: Past accomplishments and future challenges. *Journal of Management*, *36*(1), 40–65.

Simon, H.A. (1996). *The sciences of the artificial*. Cambridge, MA: MIT Press.

Sine, W.D. & Lee, B.H. (2009). Tilting at windmills? The environmental movement and the emergence of the U.S. wind energy sector. *Administrative Science Quarterly*, *54*(1), 123–155.

Smith, B.R., Matthews, C.H., & Schenkel, M.T. (2008). Differences in entrepreneurial opportunities: The role of tacitness and codification in opportunity identification. *Journal of Small Business Management*, *47*(1), 38–57.

Stevenson, H.H. & Jarillo, J.C. (1990). A paradigm of entrepreneurship: Entrepreneurial management. *Strategic Management Journal*, *11*, 17–27.

Stuart, T. & Sorenson, O. (2003). The geography of opportunity: Spatial heterogeneity in founding rates and the performance of biotechnology firms. *Research Policy*, *32*(2), 229–253.

Stuart, T.E. & Sorenson, O. (2007). Strategic networks and entrepreneurial ventures. *Strategic Entrepreneurship Journal*, *1*(3–4), 211–227.

Tang, J. & Kacmar, K.M., & Busenitz, L. (2012). Entrepreneurial alertness in the pursuit of new opportunities. *Journal of Business Venturing*, *27*(1), 77–94.

Tominc, P. & Rebernik, M. (2007). Growth aspirations and cultural support for entrepreneurship: A comparison of post-socialist countries. *Small Business Economics*, *28*(2), 239–255.

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, *14*(3), 207–222.

Tsoukas, H. (1989). The validity of idiographic research explanations. *Academy of Management Review*, *14*(4), 551–561.

Ucbasaran, D., Westhead, P., & Wright, M. (2007). Opportunity identification and pursuit: Does an entrepreneur's human capital matter? *Small Business Economics*, *30*(2), 153–173.

Ucbasaran, D., Westhead, P., & Wright, M. (2009). The extent and nature of opportunity identification by experienced entrepreneurs. *Journal of Business Venturing*, *24*(2), 99–115.

Van Aken, J.E. (2004). Management research based on the paradigm of the design sciences: The quest for field-tested and grounded technological rules. *Journal of Management Studies*, *41*(2), 219–246.

Van Burg, E., Romme, A.G.L., Gilsing, V.A., & Reymen, I.M.M.J. (2008). Creating university spin-offs: A science-based design perspective. *Journal of Product Innovation Management*, *25*(2), 114–128.

Van de Ven, A.H. (2007). *Engaged scholarship: A guide for organizational and social research*. New York: Oxford University Press.

Van de Ven, A.H. & Johnson, P.E. (2006). Knowledge for theory and practice. *Academy of Management Review*, *31*(4), 802–821.

Van Gelderen, M. (2010). A heuristic-inducing method for generating initial ideas for opportunities: An application to the Australasian dating market. *Journal of Enterprising Culture*, *18*(02), 139–166.

Venkataraman, S., Sarasvathy, S.D., Dew, N., & Forster, W.R. (2012). Reflections on the 2010 AMR decade award: Whither the promise? Moving forward with entrepreneurship as a science of the artificial. *Academy of Management Review*, *37*(1), 21–33.

Weick, K.E. (2001). *Making sense of the organization*. Oxford: Blackwell.

Welter, F. (2011). Contextualizing entrepreneurship: Conceptual challenges and ways forward. *Entrepreneurship Theory and Practice*, *35*(1), 165–184.

Westhead, P., Ucbasaran, D., & Wright, M. (2009). Information search and opportunity identification: The importance of prior business ownership experience. *International Small Business Journal*, *27*(6), 659–680.

Wiklund, J. & Shepherd, D.A. (2011). Where to from here? EO-as-experimentation, failure, and distribution of outcomes. *Entrepreneurship Theory and Practice*, *35*(5), 925–946.

Woodward, J. (2003). *Making things happen a theory of causal explanation*. Oxford: Oxford University Press.

Ylikoski, P. (2012). Micro, macro, and mechanisms. In H. Kicaid (Ed.), *The Oxford handbook of philosophy of social science* (pp. 21–45). Oxford: Oxford University Press.

Zahra, S.A. (2007). Contextualizing theory building in entrepreneurship research. *Journal of Business Venturing*, *22*(3), 443–452.

Zahra, S.A. & Wright, M. (2011). Entrepreneurship's next act. *Academy of Management Perspectives*, *25*(4), 67–83.

Zahra, S.A., Yavuz, R.I., & Ucbasaran, D. (2006). How much do you trust me? The dark side of relational trust in new business creation in established companies. *Entrepreneurship Theory and Practice*, *30*(4), 541–559.

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