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Is There Conceptual Convergence in Entrepreneurship Research? A Co-Citation Analysis of *Frontiers of Entrepreneurship Research, 1981–2004*

Denis A. Grégoire
Martin X. Noël
Richard Déry
Jean-Pierre Béchard

Conceptual convergence is often seen as a holy grail in entrepreneurship research. Yet little empirical research has focused specifically on the extent and nature of this convergence. We address this issue by content-analyzing the networks of co-citation emerging from the 20,184 references listed in the 960 full-length articles published in the *Frontiers of Entrepreneurship Research* series between 1981 and 2004. Our results provide evidence for the varying levels of convergence that have characterized entrepreneurship research over the years, as well as the evolution of the conceptual themes that have attracted scholars' attention in different periods. In addition, we provide evidence that the field relies increasingly on its own literature, something that points toward the unique contribution that it makes to the management sciences.

Along with entrepreneurship's continuing emergence among the management sciences (cf. Busenitz et al., 2003; Finkle & Deeds, 2001; Ireland, Reutzell, & Webb, 2005), there is an ongoing debate about what the field is—or should be—about (cf. Davidsson, 2003; Erikson, 2001; Shane & Venkataraman, 2000, 2001; Singh, 2001; Ucbasaran, Westhead, & Wright, 2001; Zahra & Dess, 2001). In this regard, however, several scholars have observed that the field of entrepreneurship remains highly fragmented, and that this fragmentation is hindering both its scholarly development and its legitimization among the management sciences (cf. Aldrich & Baker, 1997; Aldrich, 1992, 2000; Davidsson, Low, & Wright, 2001; Low & MacMillan, 1988; Low, 2001; Wortman, 1987).

Please send correspondence to: Denis A. Grégoire, tel.: 404-658-2815; fax: 404-651-2896; e-mail: dgregoire@gsu.edu.

Manifestly, the question of entrepreneurship's maturity as a field of study (or lack thereof) remains hotly debated. Yet, evidence of this maturity in terms of conceptual convergence has rarely been explored for its own sake, and particularly in light of theoretical and empirical considerations about the evolution of scientific disciplines. As a result, observations about the field's convergence—and by extension, about the field's degree of conceptual maturity—are often poorly grounded, and do not always build on the systematic analysis of relevant data.

We address these issues by focusing on the patterns of co-citation relationships that unite the most frequently cited references used by entrepreneurship scholars. More specifically, we analyze the co-citation networks that emerge from the 20,184 references listed in the 960 full-length articles published between 1981 and 2004 in the *Frontiers of Entrepreneurship Research* series—the proceedings of the Babson College Entrepreneurship Research Conference. In addition, we contrast the research preoccupations that have animated entrepreneurship scholars over four distinct periods.

Adopting this approach allows us to make three contributions to the management and entrepreneurship literatures. First, we provide empirical evidence for the *nature* and *level* of conceptual convergence characterizing the field of entrepreneurship. More specifically, we demonstrate that if, as a whole, the field remains characterized by a relatively low level of conceptual convergence, its evolution is marked by a succession of convergence-divergence cycles. Second, we go beyond a one-dimensional report of the “most commonly cited works” to highlight the scholarly conversations that have characterized the field of entrepreneurship *over time*. By emphasizing the evolution of these different conversations, we cast light on the theoretical, conceptual, and empirical forces that have presided over entrepreneurship's growth among the management sciences. We notably observe that if the field remains anchored on a wide array of disciplinary perspectives—including in economics, psychology, and sociology, its axes of convergence increasingly take shape from within the field itself—as opposed to being imported from the larger domains of strategy, management, or the social sciences in general. Third, we illustrate how a method of analysis derived from the sociology of science can provide insights that go beyond idiosyncratic observations, as well as analyses of the most published authors, or of the most cited references, *taken in isolation*. We also show how the method can be adapted to investigate the evolution of a particular field of study. In the end, we hope to contribute to a better understanding of the theoretical issues that animate, as Venkataraman puts it (1997, p. 120), the “invisible college” of entrepreneurship scholars.

Before we explain the methodological articulation of our study and present our results, we begin by discussing the idea of scientific convergence, and how it has been used in the field of entrepreneurship research. We then review the literature regarding scientific convergence, and draw its implications for a field of research like that of entrepreneurship.

The Idea of Convergence

Convergence is the idea that as an intellectual field matures, it becomes increasingly characterized by a set of codified theories, models, methods, and/or measures—which are to direct ongoing research. This idea is strongly associated with the “normal science” model—where “research (is) firmly based upon one or more past scientific achievements, achievements that some particular scientific community acknowledges for a time as supplying the foundation for its further practice” (Kuhn, 1996, p. 10). The main assump-

tion of this model is that “knowledge grows linearly as new data are added to the existing stock of research findings” (Astley, 1985, p. 497). In Kuhn and others (e.g., Suppe, 1977), this linear accumulation of knowledge proceeds from a widely shared “paradigm,” i.e., a set of assumptions about a field’s object of study, method of investigation, explanatory model, and overall interpretation scheme.

According to Kuhn’s model, scientific revolutions can only occur when there is increasing evidence that a paradigm is no longer sustainable, and that a new one is needed. By and large, however, the evolution of a discipline is considered to take place along the normal science route, where a paradigm is sufficiently established to guide research efforts, and is sufficiently open-ended to permit interesting developments. Accordingly, convergence is often presented as a sign of scientific progress, that is, as a sign that a field develops itself through the accumulation of evidence supporting (or replacing) its core paradigm.

As many have noted before (e.g., Aldrich, 1988; Aldrich & Baker, 1997; Aldrich, Fowler, Liou, & Marsh, 1994; Astley, 1985), this view of science is widely shared among the management sciences—even if only in a tacit manner. Indeed, this view pervades a number of discussions about the state of each field, the progresses that have been accomplished, and the directions that should be pursued. In entrepreneurship proper, one can find “need for convergence” arguments in at least five axes of debate, including:

1. Calls for consensus about the phenomenon under study, including consensus on a definition of what entrepreneurship “is,” “is not,” and “should be” (e.g., Amit, Glosten, & Muller, 1993; Bygrave & Hofer, 1991; Carland, Hoy, & Carland, 1988; Davidsson, 2003; Gartner, 1988, 1990; Shane & Venkataraman, 2000, 2001; Ucbasaran et al., 2001; Wortman, 1987);
2. Calls for consensus about the theories that can illuminate the study of entrepreneurship (Amit et al., 1993; Brazeal & Herbert, 1999; Bull & Willard, 1993; Busenitz et al., 2003; Bygrave, 1993; Davidsson, 2003; Davidsson et al., 2001; Low & MacMillan, 1988; MacMillan & Katz, 1992; Ucbasaran et al., 2001; Vanderwerf & Brush, 1989; Venkataraman, 1997);
3. Reflections about the field’s purpose (e.g., Gartner, 2001; Low, 2001; Low & MacMillan, 1988), its practical impact (e.g., Aldrich & Baker, 1997; Dennis, 2000; Hoy, 1997), or more notably, about the distinguishing contribution of entrepreneurship vis-à-vis other management sciences (cf. Venkataraman, 1997), and particularly with respect to the field of strategic management (e.g., Davidsson, 2003; Day, 1992; Erikson, 2001; Hitt & Ireland, 2000; Hitt, Ireland, Camp, & Sexton, 2001; Ireland, Hitt, Camp, & Sexton, 2001; Ireland et al., 2005; Meyer & Heppard, 2000; Rumelt, 1987; Sandberg, 1992; Shane & Venkataraman, 2000, 2001; Singh, 2001; Spender, 1993; Venkataraman & Sarasvathy, 2001, and Zahra & Dess, 2001);
4. Calls for consensus about the methods and measures used for studying entrepreneurship phenomena (e.g., Aldrich, 1992, 2000; Aldrich & Baker, 1997; Chandler & Lyon, 2001; Churchill, 1992; Churchill & Lewis, 1986; Davidsson, 2004; MacMillan & Katz, 1992; Paulin, Coffey, & Spaulding, 1982; Perryman, 1982; Peterson & Horvath, 1982; Wortman, 1987);
5. Investigations of entrepreneurship’s legitimacy among the management sciences (e.g., Katz, 2003; Kuratko, 2005), and more concretely, as evidenced in terms of entrepreneurship’s penetration among mainstream journals (e.g., Busenitz et al., 2003; Ireland et al., 2005), or in terms of the reputation associated with different outlets publishing entrepreneurship research (e.g., MacMillan, 1989, 1991, 1993; Romano & Ratnatunga, 1996).

In a paradoxical way however, the continuous publication of entrepreneurship articles calling for more convergence on these issues points to one of two possibilities: either the field is *not* evolving, or something else is preventing convergence to arise—even as the field continues its development. In this regard, it is often suggested that as a distinct field of research in the management sciences, entrepreneurship might still be in its infancy. Reflecting on this argument, Aldrich and Baker remarked that in young scientific fields, where there is little consensus on definitions or approaches, convergence is arrived at “because researchers are *attracted* by the initial progress made by early investigators (1997, p. 398).” In this light, they suggested that “influence comes from exemplary research, not from the propagation of rules or admonitions” and concluded that “the field will be shaped by those who produce research that interests and attracts others to build on their work” (Aldrich & Baker, 1997, p. 398). Surprisingly however, their own search for convergence focused not on exemplary works, but on the research designs, samples, and methods used by entrepreneurship scholars. Nevertheless, a recent account of national differences in entrepreneurship research prompted Aldrich (2000, p. 5) to repeat a conclusion that he and Baker made in 1997: “Judging from normal science standards, entrepreneurship research is still in a very early stage. If no single powerful paradigm exists, then there is even less evidence for multiple coherent points of view” (Aldrich & Baker, 1997, p. 398). If such is the case, then, their conclusion raises an important question: is the field’s lack of convergence resulting from its relative youth, or from other forces at play?

Contrasting View: Why Should Convergence Arise Anyway?

In contrast to the “normal view of science,” a number of philosophers, sociologists of science, and management/organization scholars have shown that this view of scientific progress evolving rationally from the linear accumulation of empirical knowledge might be germane for only a few scientific disciplines (e.g., Astley, 1984, 1985; Becher, 1989, 1994; Whitley, 1984b, 1984c, 2000). Indeed, these scholars pointed to a number of reasons *why* the kind of convergence implied by the “normal view of science” is unlikely to take place in fields like management in general, and entrepreneurship in particular. Three such arguments appear particularly relevant here.

The first argument focuses on the institutional dynamics anchoring the development of knowledge. In short, scholars have observed that because they do not have the same institutional characteristics, different scientific domains sustain different practices (cf. Becher, 1989, 1994). By extension, the development of scientific knowledge in these disciplines takes place along different paths. As a result, different scientific domains sustain different levels of convergence (Whitley, 2000). In terms of the latter’s typology of institutional arrangements, the management sciences can be classified as *fragmented adhocracies*—where low degrees of functional and strategic dependence among researchers are combined with high degrees of technical and strategic uncertainty about research tasks (Whitley, 1984a, 1984b). In this regard, Whitley notes how such combinations tend to result in pluralistic yet highly segmented domains (Whitley, 1984c, 2000). To the extent that it presents the same sort of institutional dynamics, the field of entrepreneurship research is thus unlikely to exhibit the high levels of conceptual convergence that characterize fields with different institutional configurations—such as in the hard sciences, pure or applied (cf. Becher, 1989, 1994).

The second reason proceeds from the reward system underpinning most scientific endeavors, and particularly in the social sciences. In those domains, research and

publishing are driven neither by the linear accumulation of knowledge, nor by a conscientious respect for the past: what drives research is novelty, surprise, controversy, interest (cf. Aldrich et al., 1994; Davis, 1971). The result is often twofold. On one hand, this “novelty” bias encourages scholars to challenge prior research, to raise doubts about accepted empirical findings, and to refute the explanation given to these findings. As Astley (1985, p. 504) and Staw (1985, p. 97) observed, this dynamic often results in research being overtly literature-driven—as opposed to problem-driven. On the other hand, though, this focus on novelty has the effect of undermining any effort that could foster convergence. As scholars move “en masse” from one “hot model” to the next, a field is more likely to be characterized by a succession of conceptual “bandwagons”—regardless of the particular merits of these bandwagons with respect to advancing scholarship.

Finally, a third reason militating against convergence stems from the growth that has characterized the management sciences over the last decades, and the field of entrepreneurship in particular. Just as the research literature in economics, strategic management, organization theory, and entrepreneurship teaches us, this growth in the “market for research” allows for a number of new “scholarly ventures” to be launched without having to face intense “academic” competition, the more so as these ventures often focus on specific “niches”—conceptual or thematic. As Whitley observes, “[this growth] enables researchers to pursue their own interests without needing to co-ordinate their results with those of specialist colleagues, and so encourages the proliferation of specialist subfields focusing on distinct problems and/or approaches” (2000, p. xxxiv). As a result, overall convergence at the conceptual level is unlikely.

Taken together, then, the three arguments of institutional arrangements, novelty-driven research, and competition-reducing growth suggest that a field like entrepreneurship research is unlikely to support particularly high levels of convergence. Accordingly, we hypothesize that considered as a whole and over a long period of time, the field of entrepreneurship will exhibit comparatively low levels of convergence. This hypothesis is in line with Aldrich and Baker’s conclusions that whether from a normal science, multiple paradigms, or pragmatic point of view, progress in entrepreneurship research has been “quite limited” (1997, p. 398).

Yet we propose that the situation might be somewhat different in the short to medium run. If research is novelty-driven, and if growth allows for competing points of view to be continually launched, it remains plausible that when considered from the perspective of shorter time frames, the field of entrepreneurship would be characterized by a succession of periodic axes of convergence. Indeed, we argue that for a relatively young field, where growth is rapid and institutional arrangements are not firmly established, scientific progress is more likely to proceed along successive bursts in multiple directions.

Taken together, these two hypotheses offer a solution to the conundrum between those scholars arguing for the need of more convergence, and those documenting the apparent lack of it. More importantly, we contend that investigating convergence in successive periods provides an opportunity to cast light on the forces that have driven the field in the past, and that still drive it today. From this point of view, the interesting question is not so much whether there has been convergence, as to what *kind* of convergence has characterized the field over different periods of its evolution. More importantly, contrasting the extent and nature of conceptual convergence over both the long and short run offers an opportunity to illuminate current debates about what the field is all about, what theoretical, conceptual, and empirical forces drive its evolution, and what kind of contribution the field of entrepreneurship actually makes to the management and social sciences.

Object of Study and Method of Analysis

Data and Sample

To explore these questions, we analyze the co-citation networks that emerge from the 20,184 references listed in the 960 full-length articles published in the Babson College Entrepreneurship Research Conference's *Frontiers of Entrepreneurship Research* (FER) proceedings between 1981 and 2004, inclusively. Note that since the 2004 edition of the FER entered the public domain in November 2005, our analyses include the entire population of FER articles available when our study was published. Five observations support the choice of this particular series as a pertinent and representative sample of entrepreneurship research.

First, the conference is one of the most prestigious in the field. Indeed, it has experienced continuous growth over the years. As a result, it has become intensely competitive (<http://www3.babson.edu/ESHIP/outreach-events/BCERC-History.cfm>). In the same vein, the FER series has evolved to publish, each year, only a select 40 or so studies as full-length articles. A committee of up to eight internationally renowned scholars from various research institutions around the globe selects the best papers from all the studies presented at a particular conference. In this sense, the FER series is arguably representative of some of the best entrepreneurship research conducted each year.

Second, the conference is also among the oldest in the field (<http://www3.babson.edu/ESHIP/outreach-events/bkerc.cfm>). As a result, the FER series offers one of the longest continuous records of entrepreneurship research—longer than most journals in the field.

Third, the conference is generally seen as an important forum in which to present upcoming entrepreneurship research (cf. Aldrich & Baker, 1997, p. 379). As such, the FER series includes entrepreneurship research that is subsequently published in *other* academic journals. Indeed, a small study by Aldrich and Baker (1997) and now updated by Babson scholars (Babson, 2005) revealed that many scholars are using the Babson College Conferences as a sounding board to present papers that are later published more formally, and notably in A-level journals. Given the editorial policies of particular journals and the time it may take for a research to be published in academic journals, the picture offered by the FER series is arguably more encompassing than that of any single journal, and captures ideas that are at the very forefront of the field's thinking.

Fourth, the conference arguably presents a more “global” picture of the field than many individual journals—the more so if we consider its international character. For instance, it was decided early on that every third year, the conference would be held in a non-U.S. location, starting with the INSEAD in 1984. In the same breadth, the editorial committee was expanded to include scholars from outside the United States. This has encouraged a number of European, Asian, South American, and African scholars to present their work at the conference, and to start working together with their North American colleagues. Thus, the FER series has become an important vector for the diffusion of the best research ideas and practices emerging from a multitude of national and continental traditions.

And fifth, we second Aldrich and Baker's arguments that “by nurturing particular types of research, [the Babson College Entrepreneurship Research Conference] may have contributed to the standardization of research practices in entrepreneurship and created a core community of researchers who can play gatekeeper roles in the profession and force its gradually emerging standards” (1997, p. 394). In this light, the FER series is representative of the field's efforts to bring its methodological standards at par with those of other fields.

Building on these arguments, we posit that the FER series offers a pertinent, legitimate, and valid representation of some of the best research efforts in entrepreneurship, and more importantly, of the citation practices of entrepreneurship scholars over the last 25 years.

Method of Analysis

We analyze this corpus of references by means of co-citation techniques—a set of methods that are widely used in the sociology of science and technology (cf. Garfield, 1979; Gmür, 2003; White & Griffith, 1981; White & McCain, 1989). In entrepreneurship proper, Déry and Toulouse (1996) used co-citation analysis to offer a detailed account of the social structuration of the field—as evidenced by the *Journal of Business Venturing* between 1986 and 1993. Likewise, Reader and Watkins (2001, 2006) used cluster analysis and multidimensional scaling to analyze the co-citation patterns associating 78 entrepreneurship authors. The present article expands on these studies by focusing on the evolution of co-citation patterns over time.

In practice, the technique has many advantages over other epistemological approaches. First, it is inherently empirical. In this light, the results it offers are fully replicable, and are not mired by the kind of idiosyncratic biases that may plague conceptual syntheses and other literature reviews conducted without the aid of empirical means.

Second, co-citation analysis has the advantage of focusing on objective indicators of conceptual convergence. In particular, the technique does not consider indirect signs of convergence like who the most published authors are (e.g., Shane, 1997), the penetration of entrepreneurship articles in A-level journals (e.g., Busenitz et al., 2003; Ireland et al., 2005), or the standardization of methodological practices (e.g., Aldrich, 1992, 2000; Aldrich & Baker, 1997; Chandler & Lyon, 2001; Churchill, 1992; Churchill & Lewis, 1986), but focuses squarely on the conceptual and empirical anchors that motivate entrepreneurship research. Naturally, these indicators are not perfect: as MacRoberts and MacRoberts (1989) observed, not all citations are equal, and some references may have been more influential for the authors of an article than those listed at the end of their work. Nevertheless, it is generally assumed that references provide a good indication of the conceptual anchors that have motivated a particular piece of research (cf. Garfield, 1979; Gmür, 2003). At the aggregate level, the correlate of this assumption implies that the more a reference is cited within a corpus of research, the more likely it participates in the intellectual structure of the field (cf. Bayer et al., 1990; Lievrouw, 1989; Small, 1980; White & Griffith, 1981).

Third, co-citation analysis has the advantage of focusing not on the most cited references taken *in isolation* from one another, but on the *relationships* between these most cited references. In this regard, Gmür noted that by definition, “[co-citation] is interpreted as the measure for similarity of content [between] two references or authors” (2003, p. 27). In this light, we make the argument that if convergence exists, it is more likely to be manifest through *groups of references repeatedly cited together*, rather than through a series of widely cited references considered in isolation from one another. In addition, we observe that focusing on the patterns of relationships within groups of references repeatedly cited together makes it easier to identify the specific *nature* of the convergence that these references embody, i.e., “what this convergence is about.” Conversely, the structure of co-citation networks provides an indication of the extent of the converging literature around particular ideas, whereas the density of these networks indicates the level of convergence around these ideas (cf. Bayer et al., 1990; Gmür, 2003; Small, 1980; White & Griffith, 1981).

Fourth, we note that the technique has already been used to investigate other bodies of literature in the business and management disciplines (e.g., Bricker, 1989; Culnan, 1987; Culnan et al., 1990), and notably that of strategic management (Déry, 1997a, 1997b). As a result, it becomes possible to draw meaningful comparisons between entrepreneurship research and neighboring fields.

Analytical Procedures

We conducted our analyses in four stages. In the first stage, we made an inventory of all the references cited in the 960 articles of our sample. To prevent the introduction of any circular-reasoning biases in the sample, we eliminated from this inventory two scientometric articles written by the first author and colleagues (Grégoire, Déry, & Béchar, 2001; Grégoire, Meyer, & Castro, 2002). Consistent with standard practices of citation analysis, we also collapsed together references to different editions of the same work (e.g., Vesper, 1980, 1990; Weick, 1969, 1979). In addition to our knowledge of these works, we relied on changes in authorship, title, and/or publisher as markers indicating that different editions effectively constituted different works (e.g., Timmons, Smollen, & Dinglee, 1977, 1985 vs. Timmons, 1990).

In the second stage, we used this inventory to create a co-occurrence matrix, where we considered the number of times the references in each pair were cited together—or not. For each pair, we calculated a co-citation index corresponding to the count of co-citations relative to the least cited reference. In line with Callon, Law, and Rip's (1986), this index can be interpreted as akin to a conditional probability, i.e., the probability of finding reference "y" when reference "x" has already been cited in a given text. In his study contrasting different methods of co-citation analysis, Gmür noted that relative to clustering methods of maximum absolute co-citation, this index is particularly appropriate to investigate "which documents define the discipline's communities or areas of research," and that because it "generates star-shaped and thereby sufficiently differentiated clusters around the respective dominant documents" (Gmür, 2003, p. 49).

In the third stage, we combined the citation frequency of each reference with the matrix of co-citation indices to construct hierarchical networks of co-citation relationships. These networks graphically represent the degree to which the most-cited references are repeatedly cited with one another. But in essence, what these networks represent is the actual use of particular groups of references by entrepreneurship scholars.

In the last and fourth stage, we content-analyzed these networks on the basis of the commonalities shared by the co-cited references. To do so, we obtained a hard copy of all the references in the networks, and used these texts to identify what each network was about. To maximize the reliability of our analyses, the four authors discussed the interpretation of the networks together. This allowed us to identify different axes of conceptual convergence upon which entrepreneurship scholars publishing in the FER series have focused on.

Analyses by Period

We used the same four stages for both the overall analysis and the by-period analyses. We chose to focus on four distinct periods: 1981–1986, 1987–1992, 1993–1998, and 1999–2004. Since we did not hypothesize that particular historical events had a predictable influence on entrepreneurship research, but were more interested in investigating the extent and nature of conceptual convergence characterizing discrete periods—if any, this

arbitrary partition was deemed appropriate. For comparison's sake, we ensured that the periods were of equal length, and that each comprised a similar number of source articles.

Considerations for Interpretation

Four methodological considerations are worth noting with respect to the presentation and interpretation of our results.

First, and in order to present a manageable picture of the field's convergence, it is necessary to concentrate our analyses on those references that are cited at least a minimum number of times. For the overall analysis, we considered only the references cited in 20 or more of the 960 source articles—corresponding to *citation frequency threshold* of about 2%. For the by-period analyses, we established the frequency threshold at 2.5% (corresponding to either six or seven of the 200+ articles for each period).

Second, and in line with the standards of co-citation analysis, we posited that for two references to share a “reasonably meaningful” co-citation relationship (i.e., one that could indicate conceptual convergence), these references had to be cited together at least a minimum number of times. We established this co-citation threshold at 0.30 for the overall analysis, and at 0.50 for the by-period analyses. This decision rule means, for instance, that a “reasonably meaningful” relationship will be considered between two references, one cited 20 times and the other one cited 15 times, only if the former is cited with the latter at least five times ($5 \text{ times} \geq 15 \times 0.30$). Note that in all cases, we are not passing any judgment on the statistical *significance* of co-occurrence relationships, but are rather striving for the identification of cogent patterns of co-citation.

Third, critics often remark that citation analyses suffer from a bias toward older citations. This is true, but only to a limited extent. As we argued above, research in a field like that of entrepreneurship is inherently driven by novelty and surprise. Indeed, bibliometric evidence demonstrates that those works that prove to be influential in the long run generally begin to be cited right after their publication (cf. MacRoberts & MacRoberts, 1989; White & Griffith, 1981). The same appears to be true in the results provided in the following discussions. But more importantly, and given our purpose of identifying specific axes of convergence, it appears that older, classical works are often less important in interpreting the nature of a network than the more recent works that are regularly co-cited with them. To take a concrete example, for instance, a classic like Schumpeter's (1934) seminal book on innovation, entrepreneurship, and economic development can be cited for many purposes: but a connection between Schumpeter (1934) and, say, Lumpkin and Dess' (1996) conceptual propositions on entrepreneurial orientation is more suggestive of a particular concern for the embodiment—and implications—of entrepreneurship as a firm-level behavior. It thus appears that whereas they may not be cited as frequently as the older “classics,” the more recent references tend to be particularly indicative of the specific ideas that unite groups of references repeatedly cited together—and thus of the particular nature of the convergence indicated by these references. Seen in this light, our interpretation of co-citation networks places a particular reliance on the more recent references.

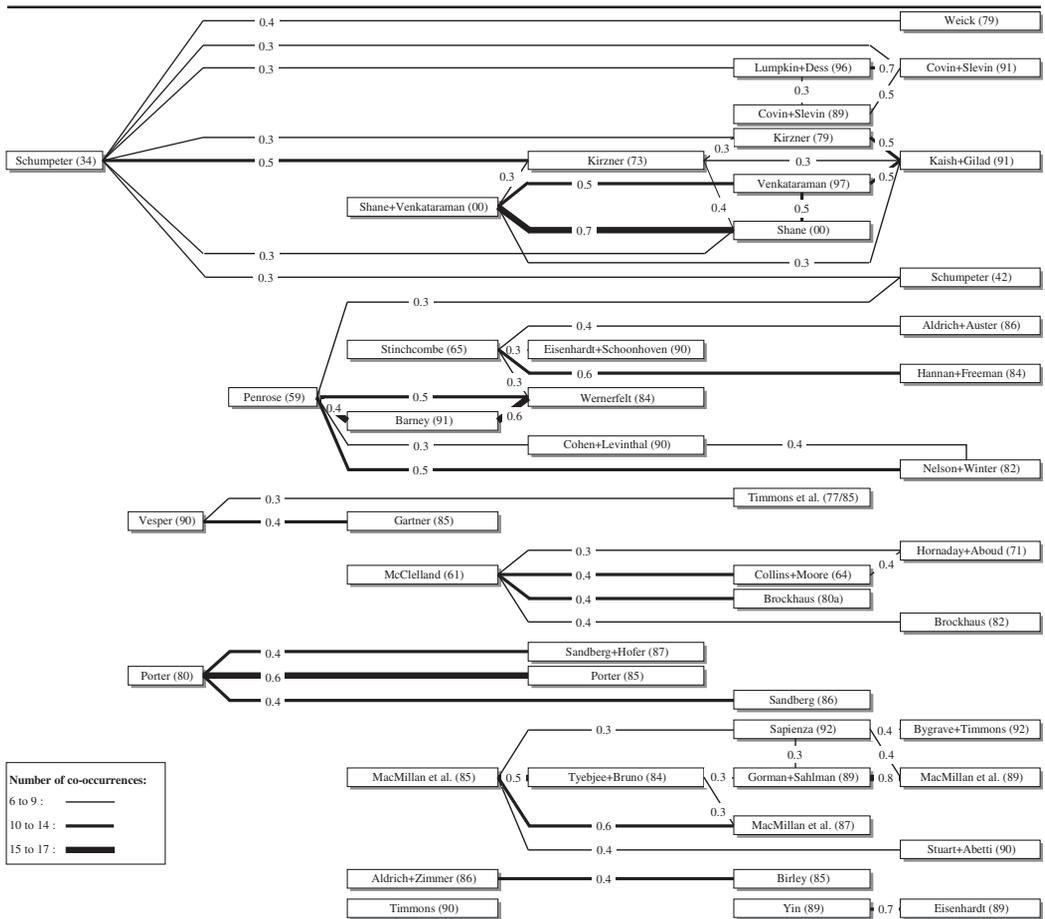
Fourth, and last, we remark that it is the *structure* of the networks that is perhaps most indicative of the degree of conceptual convergence within a body of research. The more a group of references are interconnected by co-citation relationship (i.e., the denser the network), the greater our confidence that this group forms a consistent axis of convergence. By contrast, parallel relationships, even between references that address similar issues, suggest that scholars have not (yet) coalesced around a core group of convergent references—and thereby provide lesser evidence for that convergence.

Description of Findings: 1981–2004

Figure 1 presents the co-citation networks uniting the most frequently cited references appearing in the 960 full-length articles published in the FER series between 1981 and 2004, inclusively. In total, these articles made 20,184 citations. But as some works are cited more than once, this list boils down to 11,044 different titles—the vast majority of which are only cited once (8,246) or twice (1,404). As we want to focus on patterns of co-citation that indicate broad axes of convergence, we note that across the 960 source

Figure 1

Co-Citation Networks of Most Frequently Cited References in the *Frontiers of Entrepreneurship Research* (FER) Series: 1981–2004



Numbers on lines indicate rounded co-citation index (measure that the most cited text co-occurs, given that the least cited text occurs in the same article)							
69	65-59	52	42-34	33-27	26-23	22-20	
7.19%	6.77%-6.15%	5.42%	4.38%-3.54%	3.44%-2.81%	2.71%-2.40%	2.29%-2.08%	

Number of citations in FER
 Frequency in percentage of total number of source articles
 Citation frequency threshold $\geq 2\%$ (20 articles)
 Co-citation index threshold ≥ 0.30 (30%)
 Total number of source articles for the period = 960

N.B.: Texts (frequency ≤ 40) that are not linked to a network are not shown in figure
 Total number of citations for the period = 20,184 (11,044 different titles)

articles, only 63 works are cited 20 times or more—that is, in more than 2% of the source articles. More importantly here, we remark that only 45 of those are cited with other frequently cited texts more than three times out of 10 citations (the 0.30 co-citation threshold). Given our interest for identifying potential axes of convergence—and consistent with co-citation research practices, it is on those most frequently co-cited texts that we focus our analysis.

Figure 1 highlights about a dozen networks and subnetworks of co-citation, each reflective of academic conversations that have animated entrepreneurship scholars in the last 25 years. We present each of these networks in turn, moving from the top to the bottom of the figure, and starting with the key works on the left that anchor different groups of references regularly cited with one another.¹

Schumpeter's (1934) *Theory of Economic Development* anchors a first group of three conversations. We first note a single link with Weick's (1969, 1979) *Social Psychology of Organizing*. Because it does not form part of a larger network, there is scant indication that this pair forms an important point of convergence for the field as a whole. Yet, the link evokes discussions of new-firm formation and organizational emergence (cf. Gartner, 1985). Second, we observe that Schumpeter's (1934) monograph is linked to a tightly knit group of three references explaining firm performance as *configurations* of external constraints, strategic variables, and firm-level orientations: Covin and Slevin (1989, 1991), and Lumpkin and Dess (1996). To the extent that these works have repeatedly been cited together, we deduce that they have formed an eventual axis of convergence for entrepreneurship scholars. Third, we observe that embedded within the Schumpeter network is a bipolar group of works united by their use of Kirzner's (1973) *Competition and Entrepreneurship*. On the one hand, we note that scholars have repeatedly cited together Shane and Venkataraman's (2000), and Venkataraman's (1997) conceptual statements about the domain of entrepreneurship, as well as Shane's (2000) study on the role of prior knowledge in enabling the discovery of potential opportunities. On the other hand, the links to Kaish and Gilad's (1991) article on opportunity search and Kirzner's (1979) *Perception, Opportunity and Profit* suggest that, if anything, the second head of this bipolar network rests on the general construct of *entrepreneurial alertness*. In both cases, however, the multiple relationships between the works forming this subnetwork indicate that they have constituted a rallying point for entrepreneurship scholars publishing research in FER.

Penrose's (1959) *Theory of the Growth of the Firm* provides the anchor for a second set of references. Interestingly, Schumpeter's (1942) *Capitalism, Socialism and Democracy* offers a bridge with the cluster described above. But here again, this bridge does not form part of a larger network: this suggests that scholars who used Schumpeter's and Penrose's books *together* may have done so for a variety of purposes. More directly linked to Penrose's book, we observe two pillars of the resource-based view (RBV): Barney's (1991) and Wernerfelt's (1984) articles. The relatively high citation frequency and co-citation index for these works indicate that together, they have formed an important axis of convergence for entrepreneurship scholars. Just above those two articles, we note a series of works linked to Stinchcombe's (1965) "Social Structure and Organizations" chapter, where he introduced the concept of *liability of newness*. Strong co-citation links to three other texts suggest that entrepreneurship scholars have used Stinchcombe's (1965) chapter to discuss issues of new venture growth (e.g., Eisenhard & Schoonhoven, 1990), and that often in light of organizational and environmental constraints associated

1. Note that full references for the works highlighted in Figures 1–5 are listed in Appendix 1.

with structural inertia and population ecology approaches (cf. Aldrich & Auster, 1986; Hannan & Freeman, 1984). Below the resource-based view classics, we also note co-citation links between Penrose's (1959) book, Cohen and Levinthal's (1990) *absorptive capacity* article, and Nelson and Winter's (1982) *Evolutionary Theory of Economic Change*: if anything, the links between these works evoke concerns for the challenges of innovation and organizational learning in new ventures.

Moving down in Figure 1, Vesper's (1980, 1990) *New Venture Strategies* anchors a loosely knit network of co-cited texts that include Gartner's (1985) conceptual framework to study new-venture formation, and Timmons et al.'s (1977, 1985) textbook(s). Interestingly, these oft-cited texts do not appear to have been used regularly in conjunction with any other frequently cited texts. For instance, it is striking that even if Weick (1979, 1969) formed an important basis of Gartner (1985), the co-citation link between the two texts falls below the 0.30-threshold.

McClelland's (1961) *Achieving Society* anchors another group of references. With links to the texts of Brockhaus (1980a; 1982), Collins and Moore (1964), and Hornaday and Aboud (1971), this network indicates that the psychological characteristics of entrepreneurs have historically represented an important axis of convergence for entrepreneurship scholars.

Porter's (1980) *Competitive Strategy* anchors the following network. While this book is often cited together with its 1985 *Competitive Advantage* brother, the 0.40 co-citation links to Sandberg's works (the 1986 *New Venture Performance* and 1987 article with Hofer) suggest that a number of entrepreneurship scholars have focused on the role of industry structure and competitive strategy in explaining new-venture performance.

MacMillan, Siegel, and Narasimha's (1985) article on the decision criteria used by venture capitalists to evaluate new-venture proposal anchors an extensive cluster of works focused on new-venture funding, and particularly that provided by venture capitalists (VCs). Within this network, one can observe two subgroups: a first group of texts focused on the decision criteria of VCs (e.g., MacMillan et al., 1985; MacMillan, Zemann, & Narasimha, 1987; Tyebjee & Bruno, 1984), and a second one perhaps more focused on what VCs do and the contribution they make to the new ventures they fund, over and above financing (e.g., Bygrave & Timmons, 1992; Gorman & Sahlman, 1989; MacMillan, Kulow, & Khoyllian, 1989; Sapienza, 1992). Interestingly, we also observe a 0.40 co-citation link between MacMillan et al. (1985) and Stuart and Abetti's (1990) article on the effect that business experience (one of the decision criteria noted by MacMillan and colleagues) may have on new ventures' early performance. Without a doubt, studies on the role and contribution of venture capitalists have been an important staple of the Babson Conferences in particular, and of entrepreneurship research in general. It is therefore not surprising that such an extensive network of co-cited texts appears in our analysis.

Lastly, we note at the bottom of Figure 1 two pairs of co-cited works that are not linked to other groups. A first pair groups Aldrich and Zimmer's (1986), and Birley's (1985) articles on the role of social networks in entrepreneurship. The fact that entrepreneurship scholars have repeatedly cited these two works together attests not only to the importance of the topic, but also to the fact that those two texts are seen as key references in this line of research. A second pair groups Yin's (1989) book and Eisenhardt's (1989) article, both on the relevance, use, and design of case study research. The relatively high citation frequency and co-citation index of these works suggest not only that the method has been regularly used in entrepreneurship research, but also that those who did specifically anchored their methodology on those two references.

Taken together, the networks of co-cited texts described above provide a first overview of the axes of conceptual convergence that has marked the field of entrepreneurship over

the last 25 years. Among those topics that appear to have coalesced around consistent sets of core references, we note research on the concepts of entrepreneurial orientation, opportunity and entrepreneurial alertness, and liability of newness, research drawing from a resource-based view of strategy, research on the psychological characteristics of entrepreneurs, on the industry and strategy factors that affect new-venture performance, on venture capitalists, and on social networks. In a way, these concepts and topics each represent academic conversations that have animated entrepreneurship scholars over the years, and suggest concurrent axes of convergence around which the field has been developing.

At the same time, however, it is striking that by and large, co-citation relationships *between* parallel networks are more the exception than the norm. If anything, the networks of references identified earlier stand in isolation to one another. For instance, those scholars concerned with new-venture growth and performance alternately draw from several perspectives, from an emphasis on industry structure and competitive strategy to an emphasis on a firm's resources, or to other dimensions of environmental constraints, or firm-level orientation. Seen at this level, the field of entrepreneurship appears less characterized by an overall convergence as by multiple academic conversations that share little in common. In a way, this would be in line with observations that the field is a "hodge-podge" (Shane & Venkataraman, 2000) or "potpourri" (Low, 2001) of research streams that share little in common. But we surmise that other conclusions are worth considering. Given that they do not appear to build on each other, a question arises as to whether these conversations simply co-exist in parallel universes, or if they represent developments that succeeded one another in time. To explore this issue in more detail, the next sections focus on the patterns of co-citation characterizing four distinct periods. Doing so, our analyses trace some of the conceptual forces that have shaped the field over the course of its development.

Evolution in Time: Four Portraits

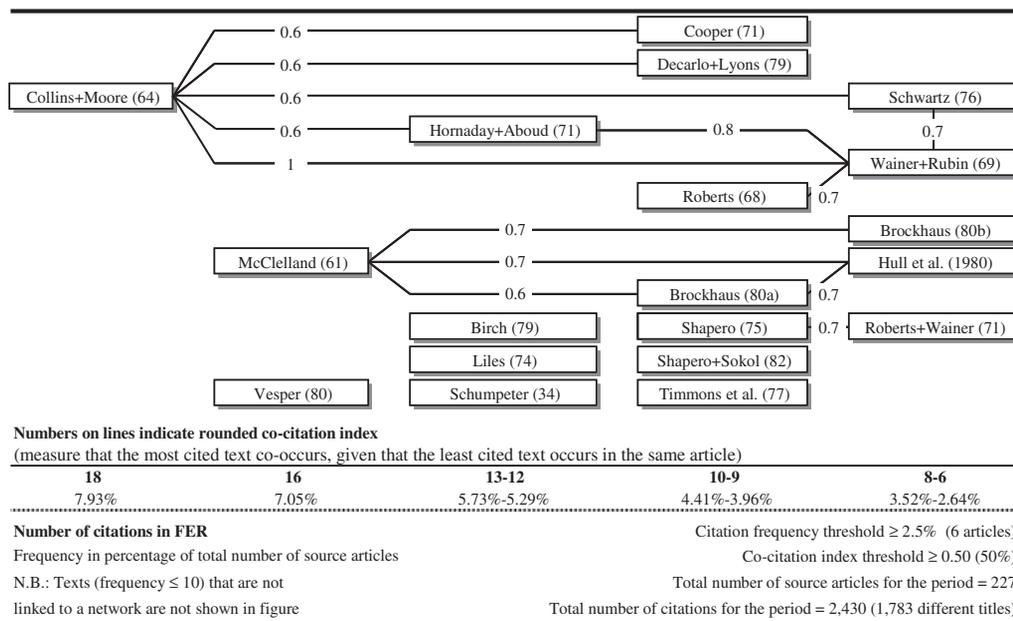
1981–1986: A Focus on the Person

Figure 2 presents the co-citation networks uniting the references most frequently cited in the 227 articles published in the FER between 1981 and 1986. The 2,430 citations for the period count 1,783 different titles, 31 of which were cited six times or more. Of those, only 13 were co-cited with another frequently cited work more than half the time (co-citation threshold ≥ 0.50). What is interesting, however, is that those texts form three parallel clusters, all of which denote a particular focus on the person of the entrepreneur, and his/her characteristics.

The first network is anchored on Collins and Moore's (1964, 1970) *Enterprising Man*. But within this network, one can observe two distinct poles. Toward the upper half of the network, Collins and Moore's (1964, 1970) monograph is linked to Cooper's (1971) study of technology entrepreneurs, DeCarlo and Lyons' (1979) study of minority entrepreneurs, and Schwartz's (1976) study of female entrepreneurs. While each focuses on discrete populations, these works all aim toward identifying the characteristics of entrepreneurs in those populations and tend to consider both personality traits (preferences and attitudes) and nonpsychological variables such as age and education. At the same time, these works indicate that entrepreneurship scholars considered the potential differences between different categories of entrepreneurs. Toward the lower half of the network, we note strong co-citation links between Collins and Moore's (1964, 1970) book and Hornaday and About's (1971) article comparing entrepreneurs and nonentrepreneurs on a range of

Figure 2

Co-Citation Networks of Most Frequently Cited References in the *Frontiers of Entrepreneurship Research* (FER) Series: 1981–1986



personality indicators, Wainer and Rubin’s (1969) study on the motivations of research and development (R&D) entrepreneurs, and Roberts’ (1968) study of technology innovators, their characteristics, and their need for achievement and power. Taken together, these works are united by their extensive use of psychometric scales meant to capture core dimensions of one’s personality.

By contrast, the second network is anchored on McClelland’s (1961) *Achieving Society*. This work shares strong co-citation links with three texts concerned with the psychological characteristics of entrepreneurs, and notably in terms of dimensions like job dissatisfaction (Brockhaus, 1980b), risk-taking propensity (Brockhaus, 1980a), and other personality characteristics like interests in money or fame, task preferences, internal locus of control, risk-taking propensity, creativity, and need for achievement (Hull, Bosley, & Udell, 1980). We also note that the latter two works share a high level of co-citation: for every three works citing Hull et al. (1980), two also cite Brockhaus (1980a) (0.667 co-citation index rounded off to 0.70).

If anything, the differences between these two clusters lie in the details: works in the second network are more recent (1980s vs. 1970s), they come from management and entrepreneurship journals (as opposed to a wider range of sources), and they tend to focus on narrower sets of variables (as opposed to contrast entrepreneurs and nonentrepreneurs on a range of psychological and nonpsychological variables). Interestingly, we also remark that while texts in the second network are perhaps more hypothesis testing than their descriptive counterparts, they also have been less successful in establishing clear differences between entrepreneurs and nonentrepreneurs. That being said, the two

networks both suggest that entrepreneurship research in the early 1980s was strongly focused on identifying those personal characteristics that distinguished entrepreneurs from nonentrepreneurs—and by extension, the reasons that might explain why some individuals but not others chose to pursue entrepreneurial endeavors.

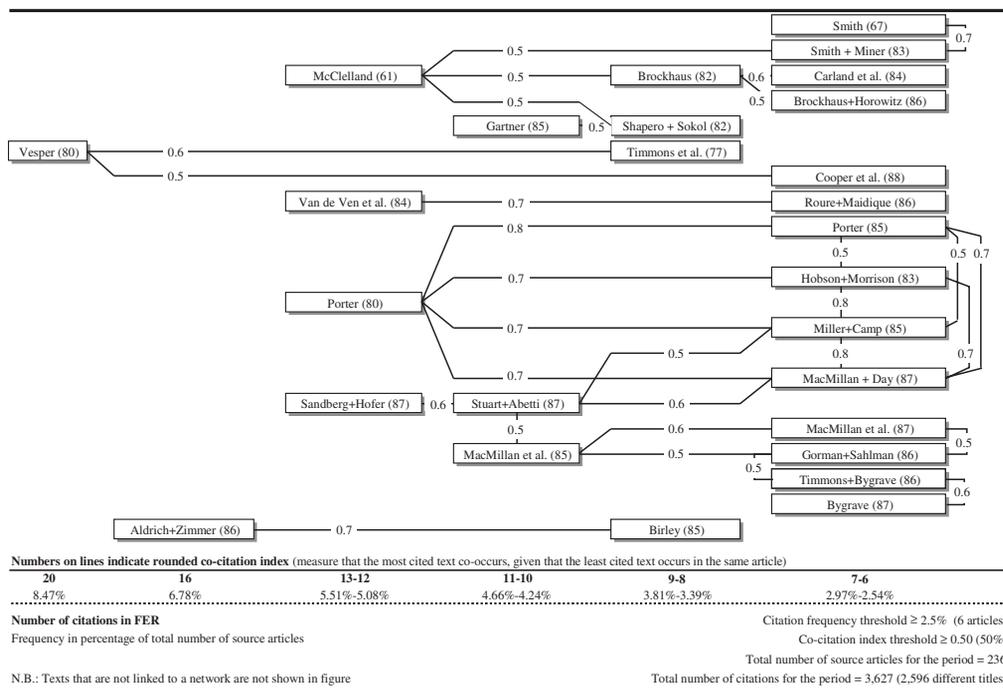
Interestingly, a third group of co-cited works pairs Shapero’s (1975) text on the “displaced, uncomfortable entrepreneur” with Roberts and Wainer’s (1971) study on the family antecedents of technical entrepreneurs. In a way, the common theme between the two works suggests that in the shadow of research focusing on personality traits and other individual characteristics, a certain number of entrepreneurship scholars were also considering the influence of social factors in explaining individual decisions to become entrepreneur.

1987–1992: The Emergence of New Topics

Figure 3 presents the co-citation networks uniting the references most frequently cited in the 236 articles published in the FER between 1987 and 1992. From the 3,627 citations made in the period, we counted 2,596 different titles. Yet only 44 of those were cited six times or more, of which 27 share co-citation relationships with other frequently cited texts above the 0.50 threshold. The main story here is that while research on the characteristics of entrepreneurs remains salient, a number of new themes and topics make their entry.

Figure 3

Co-Citation Networks of Most Frequently Cited References in the *Frontiers of Entrepreneurship Research (FER) Series: 1987–1992*



At the top of Figure 3, we first observe a group of highly co-cited works that prolongs the second cluster noted in the 1981–1986 period. Still anchored on McClelland’s (1961) *Achieving Society*, this cluster is now squarely focused on the motivation traits that could explain one’s decision to engage in entrepreneurial pursuits. This is notable in pieces such as Smith’s (1967) and Smith and Miner’s (1983) contrasts between two types of entrepreneurs (craftsmen and opportunistic), as well as in the cluster formed by Brockhaus’ (1982) and Brockhaus and Horowitz’s (1986) handbook chapters, with Carland, Hoy, Boulton, and Carland’s (1984) arguments for considering the motivations of entrepreneurs as primary causes for their behavior. Interestingly, however, this cluster also includes a pair of co-cited works—Shapero and Sokol’s (1982) chapter on the “Social Dimensions of Entrepreneurship” and Gartner’s (1985) “Conceptual Framework for Describing the Phenomenon of New Venture Creation”—both of which argue for drawing scholarly attention to the contextual factors that motivate entrepreneurship, over and above the extant focus on personality traits and individual motivators.

As we have seen in the overall picture, we note a pairing between some of the early textbooks that devoted attention to the overall process of new-venture formation (cf. Vesper, 1980, 1990; Timmons, 1977, 1985). Interestingly, Vesper’s (1980, 1990) text is regularly cited with Cooper, Woo, and Dunkelberg’s (1988) study on entrepreneurs’ perceived chances for success. However, the absence of further co-citation relationships limits evidence about the nature of this grouping.

In parallel, however, we observe another isolated pairing, that between Van de Ven, Hudon, and Schroeder’s (1984), and Roure and Maidique’s (1986) article. The fact that both articles study the relationships between characteristics of the entrepreneurs and of their firm’s organization on the one hand, and new-venture performance on the other suggests that entrepreneurship scholars were beginning to focus on this theme. Yet it is interesting to note that this pair is independent of a tightly knit cluster of works anchored by Porter’s (1980) *Competitive Strategy*, and which indeed focuses on the question of new-venture performance. By contrast with the above pair, however, this cluster is perhaps less focused on founders’ and organizational characteristics, and more with the influence of industry structure, firm-level strategy, and other aspects of competitive advantage on performance. This focus is manifest not only in texts like Porter’s (1985) *Competitive Advantage*, but also in empirical studies like those of Hobson and Morrison (1983), Miller and Camp (1985), MacMillan and Day (1987), Sandberg and Hofer (1987), and Stuart and Abetti (1987)—all of which test the causal relationship between aspects of industry structure, market attractiveness, and/or competitive advantage/strategy, and some measure of firm performance. Within this cluster, however, the tight network of cross-citation relationships among Porter (1980), Porter (1985), Hobson and Morrison (1983), Miller and Camp (1985), and MacMillan and Day (1987) echoes that their common denominator is a focus on corporate venturing, and indicates that this topic formed an important rallying point for entrepreneurship scholars during the 1987–1992 period. By contrast, the off-center pair between Sandberg and Hofer (1987) and Stuart and Abetti (1987) shares a more direct focus on independent new ventures, even if the latter work is frequently cited with articles focusing on corporate venturing.

Interestingly, Stuart and Abetti’s (1987) study of the predictors of startup success is regularly co-cited with MacMillan et al.’s (1985) study of the venture capitalist’s decision criteria. If anything, the common denominator between the two is a focus on entrepreneurs’ prior experience as a potential indicator of their future success. As we have observed in the overall picture, the latter work anchors a tight network of works focusing on the place and role of venture capitalists in entrepreneurship (Bygrave, 1987; Gorman & Sahlman, 1986; MacMillan et al., 1987; Timmons & Bygrave, 1986).

Lastly, the strong co-citation link uniting Aldrich and Zimmer (1986) and Birley (1985) indicates that at the turn of the 1990s, a growing number of entrepreneurship scholars were focusing on the role and impact of social networks.

Compared with the patterns of co-citation characterizing the 1981–1986 period (cf. Figure 2), results from the 1987–1992 period show that, toward the second half of the 1980s, entrepreneurship research began to move beyond the individual characteristics of entrepreneurs and started to show interest for other conceptual endeavors. Interestingly, we observe that in at least two cases (i.e., research on the on corporate venturing and new-venture performance in general, and on venture capital), the networks of co-citation appear somewhat denser than what we observed for the 1981–1986 period, with sensibly more co-citation relationships *within* each of these networks. In other words, entrepreneurship research of the 1987–1992 period appears to have coalesced around tighter groups of key references.

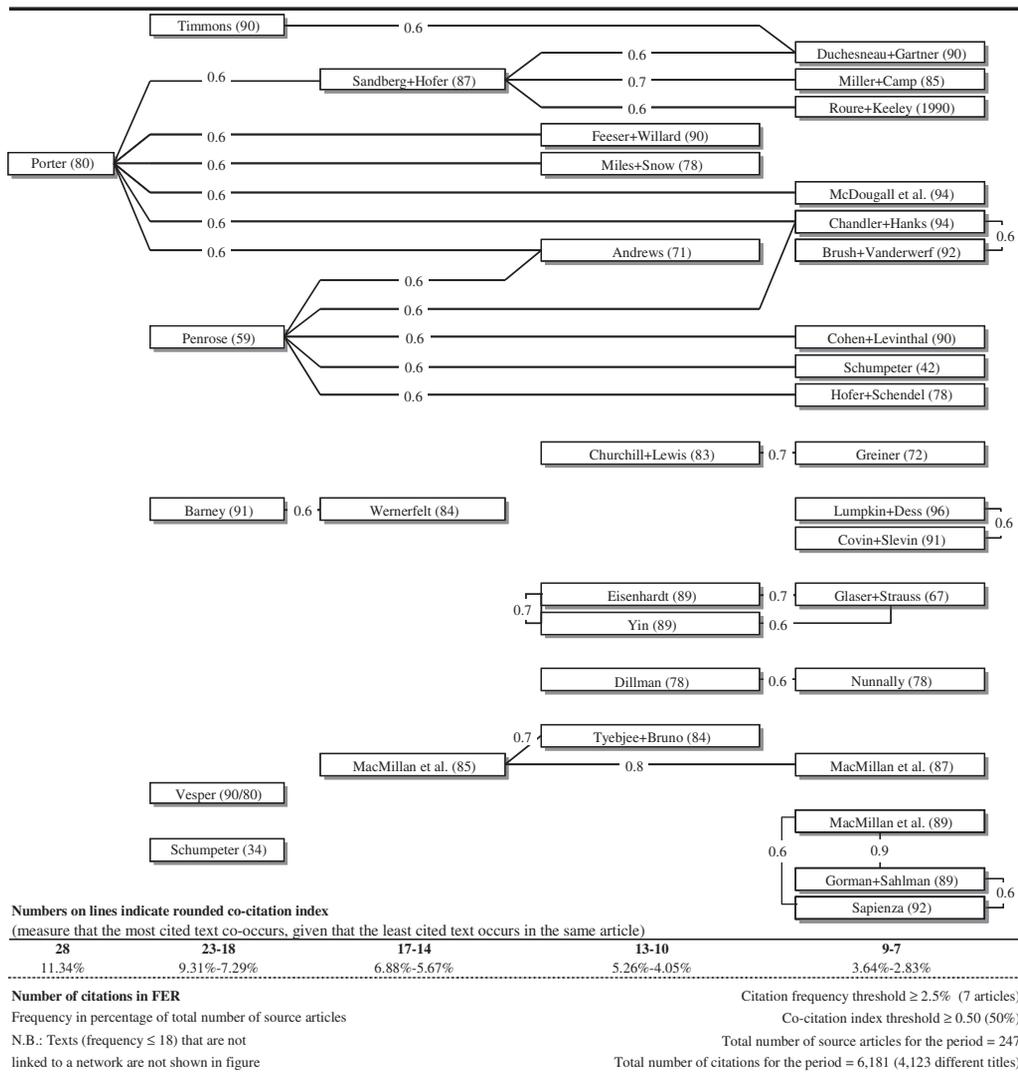
1993–1998: A Subfield of Strategy

Figure 4 presents the co-citation networks uniting the references most frequently cited in the 247 articles published in the FER between 1993 and 1998. As a whole, these articles count 6,181 citations to 4,123 different titles, 71 of which were cited more than seven times. Of those most cited texts, 33 were repeatedly co-cited with other frequently cited texts. When compared to the previous period, however, the co-citation networks for 1993–1998 appear somewhat *less* dense, with fewer cross-citations within clusters. Instead, we observe a series of parallel one-to-one relationships between an anchor and some of its entrepreneurship articulations.

For instance, the network anchored by Porter's (1980) *Competitive Strategy* groups some classic monographs of the strategy literature (e.g., Andrews' [1971] *Concept of Corporate Strategy* and Miles and Snow's [1978] *Organization Structure, Strategy and Process*) and also several articles looking at the relationships between industry structure and characteristics, firm strategy, and new-venture performance. However, the absence of co-citation relationships between these articles—at least above the 0.50-threshold—indicates that from the point of view of entrepreneurship scholars' citation practices, each of these pieces constitutes its own “conceptual island”—emphasizing a particular dimension or argument within the larger “archipelago” of works on new-venture performance. This is manifest, for instance, in the relative *dearth* of co-citation links between, say Duchesneau and Gartner (1990), Miller and Camp (1985), or Roure and Keeley (1990)—even if all three studies compared successful and unsuccessful new ventures and are regularly cited with Sandberg and Hofer's (1987) article on “the role of strategy, industry structure, and the entrepreneur” in determining new-venture performance. Likewise, Feeser and Willard's (1990) focus on “founding strategy and performance” is not regularly cited with McDougall, Covin, Robinson, and Herron's (1994) exploring of the effects of industry growth and strategic breadth on new venture performance and strategy content—and neither is it regularly co-cited with Chandler and Hanks' (1994) investigation of the “fit” between market attractiveness, venture strategies, and resource-based capabilities. Furthermore, we observe that with the exception of the latter, none of these works is regularly cited with Brush and Vanderwerf's (1992) “A Comparison of Methods and Sources for Obtaining Estimates of New Venture Performance”—and that even if all of them focus on the dependent variable of new-venture performance. Again, the co-citation evidence indicates that instead of leading the field to converge upon a cluster of key references, the rise of the competitive strategy perspective in entrepreneurship

Figure 4

Co-Citation Networks of Most Frequently Cited References in the *Frontiers of Entrepreneurship Research (FER) Series: 1993–1998*



research has been associated with a series of parallel academic conversations, with apparently little cross-pollination.

The same can be observed with the network of texts anchored by Penrose’s (1959) *Theory of the Growth of the Firm*. While the link with Chandler and Hanks’ (1994) article could suggest the emergence of research adopting a resource-based perspective, we note that neither work is regularly cited with the pair uniting Barney (1991) and Wernerfelt (1984)—two articles that contributed to define the perspective. Instead, Penrose’s (1959) book is associated with three works that do not share co-citation relationships above the

0.50-threshold: Cohen and Levinthal's (1990) article on innovation, learning, and absorptive capacity; Schumpeter's (1942) *Capitalism, Socialism and Democracy* and Hofer and Schendel's (1978) *Strategy Formulation*.

In the same spirit, the second half of Figure 4 lists a series of dyads or triads that share little relationships with other networks. This includes the pair formed by Churchill and Lewis (1983) and Greiner (1972), which signals scholarly interest for framing entrepreneurship studies in terms of growth stages, and for studying the implications of life-cycle concepts for new-firm emergence, growth, and performance. We also note the pair formed by Lumpkin and Dess (1996), and Covin and Slevin (1991), which indicates a growing interest for the implications of conceiving entrepreneurship as a set of firm-level behaviors and orientations.

Two groups denoting a focus on research methods follow: a first pair focused on survey design and their implementation (represented by Dillman, 1978; Nunally, 1967, 1978); and a second triad focused on qualitative research, case study designs, and inductive approaches (represented by Eisenhardt, 1989; Glaser & Straus, 1967; Yin, 1989). If anything, the sudden appearance of methodology references may indicate a particularly acute concern of entrepreneurship scholars (at least those publishing in the FER during this period) for establishing the soundness and legitimacy of their research practices (and concurrently, of their findings).

Lastly, the bottom of Figure 4 suggests that during this period, the corpus of works focusing on venture capital "exploded" in two distinct streams of research: a first one centered on the decision models of venture capitalists (represented by strong indices of co-citation among MacMillan et al., 1985; Tyebjee & Bruno, 1984; MacMillan et al., 1987), and a second one centered on the actual contributions of venture capitalists to the growth and performance of the venture they fund (represented by strong indices of co-citation among MacMillan et al., 1989; Gorman & Sahlman, 1989; Sapienza, 1992). Interestingly, there is no evidence that works in these two groups were cited together more than half the time—suggesting here again that the two streams of research were evolving in parallel to one another.

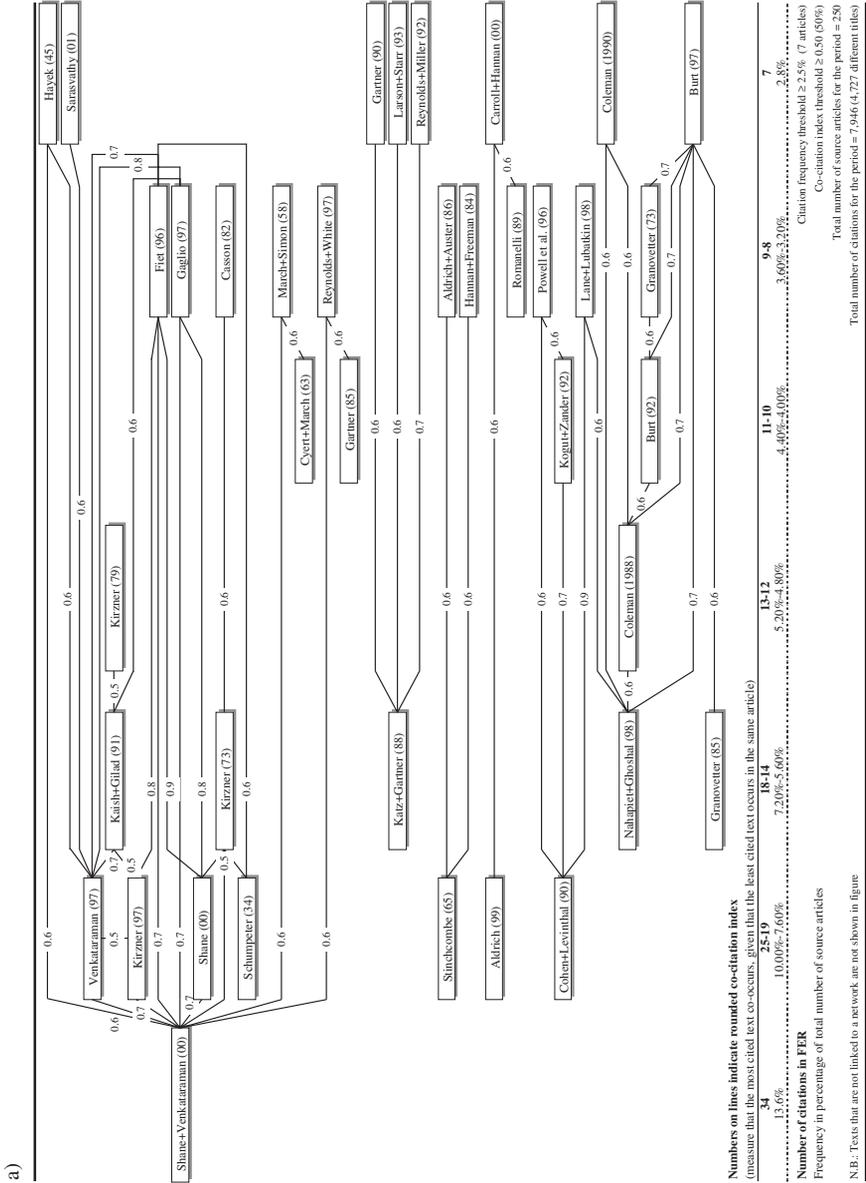
Compared to the 1987–1992 period, four interesting elements appear more salient in 1993–1998. First, we observe the disappearance of references about the personality traits and individual characteristics of entrepreneurs—suggesting that these variables were no longer drawing the kind of attention they used to in prior periods. Second, we note that while it is evolving in at least two different directions, research on venture capital remains an important area of interest, at least in terms of what is being published in the FER series. Third, we note the increasing dominance of a strategy-driven agenda, and notably through the numerous references inspired by Porter (1980), and with the emergence of the resource-based perspective. Fourth, however, we observe that the density of the co-citation networks for the 1993–1998 period is noticeably lower than what was observed for the preceding period, with fewer co-citation relationships among the various references falling under the same general umbrella. This suggests that in the mid-1990s, the field of entrepreneurship was in a state of flux, with fewer and weaker points of convergence. In more ways than others, this may indicate that if entrepreneurship research had increasingly become a subfield of strategic management, it remained in search of its own voice. Indeed, the next period offers a radically different portrait.

1999–2004: New Beginnings

Figure 5a and 5b presents the co-citation networks uniting the most frequently cited references in the 250 articles published in the FER between 1999 and 2004. From a total

Figure 5

Co-Citation Networks of Most Frequently Cited References in the *Frontiers of Entrepreneurship Research (FER) Series: 1999–2004*



number of 7,946 citations for the period, we counted 4,727 distinct titles. Of these, 138 titles were cited in seven or more articles, including 76 who regularly appeared with other frequently cited works (i.e., above the 0.50 co-citation threshold). More importantly, however, we note that even at a first glance, the co-citation networks displayed in Figure 5a and 5b appear noticeably more “clustered” than anything we observed in previous periods—with more co-citation relationships *within* groups of texts focusing on a similar topic.

Starting from the top of Figure 5a, we first observe an extensive network of references anchored on Shane and Venkataraman’s (2000) conceptual statement about the “distinctive domain of entrepreneurship research.” Interestingly, we remark that this is the first time in the four periods that the most frequently cited work is an entrepreneurship-specific piece, and not a book on personal psychology or competitive strategy. At the same time, the network of texts related to Shane and Venkataraman’s (2000) article suggest that if anything, the conceptual anchor of this group lies no longer in psychology or industrial organization (I/O) economics, but in economic theories concerned with disequilibrium and its consequence for market processes and economic dynamics.

Within the Shane and Venkataraman (2000) umbrella, we first note a network grouping Venkataraman’s (1997) precursor to Shane and Venkataraman (2000), Kirzner’s (1997) *Austrian Approach* article, Kaish and Gilad’s (1991) alertness article, and Kirzner’s (1979) *Perception, Opportunity and Profit*. As in the main overview, the focus of this cluster appears to be on entrepreneurial alertness and the perception of opportunities. Interestingly, Venkataraman’s (1997) chapter is also regularly co-cited with both Hayek’s (1945) “Use of Knowledge in Society” and Sarasavathy’s (2001) piece on the particular decision mode of entrepreneurs (effectuation). However, because neither work is regularly co-cited with other texts, there is limited evidence to suggest that these works provided specific concepts or topics upon which the field has converged. At the same time, however, the fact that these works are regularly cited with Venkataraman’s (1997) chapter indicate that entrepreneurship scholars recognized these works as proceeding from the same movement toward defining the field upon the identification and exploitation of opportunities.

Just below this first cluster, and still within the conceptual umbrella anchored on Shane and Venkataraman (2000), we note a tightly knit group uniting Shane’s (2000) qualitative study on the role of prior knowledge, Fiet’s (1996) discussion of the informational advantage of individual knowledge for opportunity discovery, and Gaglio’s (1997) review of different models of opportunity identification. Clearly here, the common theme between these works suggest that at the beginning of the millennium, entrepreneurship scholars were particularly engaged with studying the phenomenon of opportunity recognition/discovery: but if anything, this second cluster suggests a move from emphasizing trait/behavior variables like entrepreneurial alertness, to studying the effects of factors like prior knowledge as *enabling* the identification of opportunities.

Interestingly, Shane and Venkataraman’s (2000) article also appears regularly with two pairs of works. A first pair groups March and Simon’s (1958) *Organizations* with Cyert and March’s (1963) *Behavioral Theory of the Firm*, two seminal works in organization theory. The second pair groups Gartner’s (1985) “Conceptual Framework for Describing the Phenomena of New Venture Creation” with Reynolds and White’s (1997) book *The Entrepreneurial Process: Economic Growth, Men, Women and Minorities*. While none of the texts in these two pairs co-occur with other frequently cited texts above the 0.50 threshold, it remains interesting to observe that both pairs appear concerned with issues of organization—whether in terms of their internal dynamics or in terms of their emergence. In the latter case, we also note that neither Gartner (1985) nor Reynolds and

White (1997) co-occur regularly with any of the following four texts that focus specifically on the question of organizational emergence, i.e., the group anchored by Katz and Gartner's (1988) "Properties of Emerging Organizations," which also includes Gartner's (1990) "What Are We Talking About" article, Larson and Starr's (1993) "Network Model of Organization Formation" and Reynolds and Miller's (1992) "New Firm Gestation" article. Taken as a whole, these "broken" clusters indicate that if the idea of articulating entrepreneurship research in terms of organizational emergence has continued to draw attention from scholars publishing in the FER, it has not necessarily coalesced around a core set of key references. At the same time, however, it is interesting to note that at least some of the time, this focus on organizational emergence is cast in relation to Shane and Venkataraman's (2000) proposed focus on the identification and exploitation of opportunities. Whether these two proposals for the field are presented as in line with one another, against one another, or as a complement to each other, the networks of references observed for the 1999–2004 period suggest that scholarly conversations on the distinctive contribution of entrepreneurship research are well engaged, and continue to draw the attention of entrepreneurship scholars from at least two different conceptual perspectives, one anchored on Austrian economics, and the other on organization theory.

By contrast, the following clusters emphasize different topics, but remain united by an implicit grounding in sociology and associated perspectives. For instance, a first network groups Stinchcombe's (1965) chapter with the works of Aldrich and Auster (1986), and Hannan and Freeman (1984). Such a grouping denotes an interest in the implications of liabilities of newness for the creation, growth, survival, and mortality of new firms—and that perhaps less in terms of individual firms as at the level of *population(s)* of firms. In the same vein, a second network groups Aldrich's (1999) *Organizations Evolving* book with Carroll and Hannan's (2000) *Demography of Corporations and Industries*, which is regularly co-cited with Romanelli's (1989) article on the effects of environmental resources, competitive conditions at the time of founding, and organizational strategies on a new firm's likelihood of early survival. While this second group shares with the first a similar population ecology perspective, its focus appears to be less on within-organization dynamics (such as liabilities of newness and structural inertia) as on macroenvironmental factors (such as industry growth and concentration, resource availability, etc.).

In turn, the Shane (2000) text is linked to two dyads uniting Kirzner's (1973) and Schumpeter's (1934) monographs on the one hand, and Kirzner's (1973) and Casson's (1982) book on the other. While all these works have been important in conceptualizing the phenomenon of entrepreneurship, the links with Shane (2000) and between Schumpeter (1934) and Fiet (1996) suggest that several scholars at the turn of the Millennium were positioning their work within what they saw as a tradition of economic approaches to the study of entrepreneurship.

Toward the bottom of Figure 5a, we observe two clusters of texts that were eventually linked through Lane and Lubatkin's (1998) article on interorganizational learning. The first cluster is anchored by Cohen and Levinthal's (1990) article on absorptive capacity, which is regularly co-cited with both Kogut and Zander's (1992) article on organizational knowledge, combinative capabilities, and innovation/imitation, and Powell, Koput, and Smith's (1996) article arguing that "when the knowledge base of an industry is both complex and expanding, and the sources of expertise are widely dispersed, the locus of innovation will be found in networks of learning, rather than in individual firms" (1996, p. 116). Clearly, the focus here is on the interface between innovation and learning, but with a particular emphasis on the role of interorganizational networks. Interestingly, we remark that through the citation of Lane and Lubatkin's (1998) article, this group of texts is linked to an extensive cluster of works focusing on social capital. Anchored by Nahapiet

and Ghoshal's (1998) conceptual article on the role of social and intellectual capital on the creation of organizational advantage, this cluster includes works by three eminent sociologists—Burt, Coleman, and Granovetter—all focused on the relationships between social networks and competitive dynamics (cf. Burt, 1992, 1997; Coleman, 1988, 1990; Granovetter, 1973, 1985). Taken together, these works indicate that in the period 1999–2004, entrepreneurship scholars publishing in the FER became particularly interested by the implications of social capital for various dimensions of entrepreneurship, including perceptions of uncertainty and the recognition of opportunities, the choice of alliance structure, and more generally, the creation of firm-level advantages through learning and innovation. Interestingly, we observe that if the question of social networks had first appeared in the 1987–1992 period—through references to Aldrich and Zimmer (1986), and Birley (1985), it has received less attention in the 1993–1998 period, but eventually enjoyed resurgence in more recent years. More importantly, we note that this interest is now firmly anchored on texts published in the sociology literature—a discipline that was not as present in previous years. At the same time, however, we remark that through the link offered by Lane and Lubatkin (1998), and Nahapiet and Ghoshal (1998), this focus on social network and social capital may be used to understand the learning and innovation dynamics that are at the basis of particular forms of organizational advantage.

Moving to Figure 5b, we first note a tight cluster of classics associated with the resource-based view (e.g., Penrose, 1959; Barney, 1991; Wernerfelt, 1984). The high citation frequency of these works and their high level of co-citation indicate that the RBV has continued to draw scholarly attention during the 1999–2004 period. However, we note that by contrast to the previous period, this perspective is no longer associated with a series of references denoting a single focus on new-venture performance—such as the pair formed by Chandler and Hanks (1994) and Brush and Vanderwerf (1992). As a result, evidence that the RBV has formed a defining axis of convergence for the period is lessened.

Having said that, we note a tightly knit cluster of works focused on the firm-level articulations of entrepreneurship. To the seminal works of Covin and Slevin (1989, 1991), and Lumpkin and Dess (1996) that emerged in the 1993–1998 period, this cluster now includes not only older works that defined the so-called configuration approach (e.g., Miller, 1983; Miller & Friesen, 1982, 1983), but also more recent works that focused on corporate entrepreneurship (e.g., Zahra, 1991, 1993; Zahra & Covin, 1995). If anything, the fact that this cluster now includes older and more recent works indicates that the research streams exploring the firm-level dimensions of entrepreneurship has grown in both extent and depth. More importantly, the high level of co-citation indices that unite works within this cluster indicates that this research stream has not only formed an important axis of convergence for the field of entrepreneurship research, but also that it has coalesced around a consistent set of key references.

The following networks show a continuous interest in the FER for research on venture capital. By contrast to the previous periods, however, this research appears somewhat more scattered. For instance, Sapienza's (1992) work on the contribution of VCs to the firm they invest in is no longer co-cited with other works focused on similar issues, such as those in the cluster formed by Gorman and Sahlman's (1989) "What Do Venture Capitalists Do," MacMillan et al.'s (1989) "Venture Capitalists' Involvement in their Investments," and Megginson and Weiss' (1991) article on VCs certification, or with other works by Sapienza and colleagues (1996). Likewise, Gupta and Sapienza's (1992) work on VCs' "preferences regarding the industry diversity and geographic scope of their investments" is not regularly co-cited with other works on VC's decision-models, such as those in the cluster formed by Hall and Hofer (1993), Tyebjee and Bruno (1984), and

MacMillan et al. (1985, 1987). Having said that, we remark that if one topic has gathered convergent attention in VC research for the 1999–2004 period, it is the structure of VC financing deals—their syndication, so to speak. Indeed, this focus is manifest in a relatively tight network of texts that unite articles by Sahlman (1990), Bygrave (1987), Lerner (1994), and Sorenson and Stuart (2001). Interestingly, we note that by and large, FER scholars' interest for syndication networks has yet to draw—at least in a consistent manner—from the literature on social capital that inspires their colleagues focused on the creation of firm-level learning and innovation advantages. This is not to say that this parallel has not been made: clearly, some VC scholars are familiar with both literatures, and effectively work at the interface between the two. What this means, however, is that as a group, VC scholars concerned with social networks have not *systematically* cited works from both research streams—at least above the 0.50-threshold used in our analysis.

Toward the bottom of Figure 5b, we note a network of references that echoes the emergence of entrepreneurship research drawing from a cognitive perspective. Anchored by Busenitz and Barney's (1997) study of entrepreneurs' tendency to rely on decision heuristics, this cluster includes review articles such as Shaver and Scott (1991) and Gartner, Bird, and Starr (1992)—respectively on the interface between research in psychology and entrepreneurship, and organizational behavior and entrepreneurship. It also includes Fiske and Taylor's (1991) classic overview of the social-cognitive approach, its key concepts and associated findings, and Baron's (1998) conceptual propositions about the import of cognitive processes for one's decision to engage in entrepreneurial pursuits. The relative dearth of co-citation links within this cluster, however, suggests that research on the cognitive dimensions of entrepreneurship has yet to coalesce on a consistent set of convergent references.

Lastly, we note that at least some entrepreneurship scholars have drawn from agency theory: this is evidenced by the pair uniting Jensen and Meckling (1976), and Fama and Jensen (1983)—two classic articles that contributed to define the theory. We also note the recurrent use of case study methodologies, as indicated by the repeated use of works by Yin (1989) and Eisenhardt (1989). However, because these two pairs are not linked to other works, at least above the 0.50 co-citation threshold, there is limited evidence as to the particular kind of research that made use of these concepts and methods.

By and large, several key observations emerge from Figures 5a and 5b. First and foremost, we observe that compared to the 1993–1998 period, entrepreneurship research published in the FER during the 1999–2004 period has coalesced around several tightly knit clusters of references, centered notably on the questions of opportunity identification and exploitation, organizational emergence, the relationships between social capital, interorganizational learning and innovation, the implications of entrepreneurship as a firm-level dimension, and the syndication network of venture capitalists financing arrangements. Indeed, the comparison between the two periods shows that instead of parallel co-citation links between an anchor and some of its various embodiments in entrepreneurship, the co-citation networks for the 1999–2004 period appear as somewhat “denser”—with several co-citation links within the works forming a cluster. We also remark the rise of new perspectives—notably the anchoring entrepreneurship research on the concepts of opportunity, organizational emergence, social capital, and cognitive psychology. Indeed, these concepts and approaches effectively replaced the strategic focus on new-venture performance that more or less dominated entrepreneurship research in the preceding period. Interestingly, this observation suggests that if the field has *not* converged on a dominant paradigm, it has nonetheless gone through a profound mutation at the turn of the millennium. Building on these preliminary observations, we can now return to the question of conceptual convergence in entrepreneurship research.

Discussion

The Nature of Conceptual Convergence in Entrepreneurship Research

Has there been convergence in entrepreneurship research? Manifestly, yes. This convergence is evidenced by the emergence of consistent networks of co-citation, where entrepreneurship scholars repeatedly anchor their work on similar sets of key references. At the aggregate level, analysis of the co-citation networks between the most frequently cited references in the FER articles reveal that over the last 25 years, entrepreneurship scholars have repeatedly drawn from works emphasizing the identification and exploitation of opportunities, the antecedents and consequences of innovation and entrepreneurship firm-level orientation/behaviors, the issues and dynamics surrounding new-venture emergence, survival and growth, the factors and dynamics affecting new-venture performance, the individual characteristics of entrepreneurs, the practice of venture capitalists and the contribution they make to the firms they finance, and the influence of social networks in entrepreneurship. By and large, these clusters of conceptual convergence are consistent with clusters evidenced by Ratnatunga and Romano (1997), Reader and Watkins (2006), and Schildt, Zahra, and Sillanpää (2006), who all used different techniques and databases. As such, this observation suggests that while they are drawn from a single publication outlet, our observations are generally representative of the field as a whole.

Having said that, analyzing the patterns of co-citation over four successive periods reveal that these axes of convergence have greatly evolved over the last 25 years. Contrary to Ratnatunga and Romano's (1997) observation about small business research between 1986 and 1992, we find that even during that period, "the personal characteristics of entrepreneurs" did not form a "consistent topic" defining the field of entrepreneurship research. Indeed, we remark that whereas this topic dominated the FER co-citation networks for the first part of the 1980s, this topic waned over the subsequent years. In its place, a resolutely strategic agenda emerged in the late 1980s, and dominated entrepreneurship research through most of the 1990s. This agenda was notably observed through consistent references to classic works of strategic management, and entrepreneurship articles focused on the industry and firm-level factors that could account for new-venture performance. But even then, the strong anchoring of FER research on strategic management issues was more or less completely replaced by a host of new ideas in the 1999–2004 period. Among these new axes of conceptual convergence, the latter period saw the rise of references to the identification / exploitation of opportunities, literature on social capital and networks, a renewed interest for the question of emergence, and to a lesser degree, the appearance of references to research on entrepreneurial cognition.

Interestingly, a high-level comparison between the four periods suggests that from a disciplinary standpoint, research published in the FER during the 1981–1986 period was first and foremost anchored on personality and social psychology (e.g., Hornaday & Aboud, 1971; McClelland, 1961)—even as it also left a large place for more *descriptive* works attempting to circumscribe the larger phenomenon (e.g., Birch, 1979; Collins & Moore, 1964, 1970). In turn, our results show that the FER research published during the 1987–1992 period was anchored on a relatively wider array of conceptual perspectives, which, in addition to personality and social psychology, included sociology (e.g., Aldrich & Zimmer, 1986; Shapero & Sokol, 1982), organization theory (e.g., the Weick-inspired Gartner, 1985; Van de Ven et al., 1984), as well as industrial organization economics (e.g., Porter, 1980, 1985). By contrast, the 1993–1998 period was more narrowly anchored not only on economic theories, notably I/O economics (e.g., Porter, 1980), but also on theories

associated with the resource-based view (e.g., Barney, 1991; Penrose, 1959; Wernerfelt, 1984). Still, the 1999–2004 period showed that entrepreneurship scholars publishing in the FER have yet drawn from a wider array of conceptual perspectives, including Austrian economics (e.g., Hayek, 1945; Kirzner, 1973, 1979, 1997), organizational sociology (e.g., Aldrich, 1999; Hannan & Freeman, 1984), network and social capital sociology (e.g., Burt, 1992; Coleman 1990; Granovetter, 1973, 1985), configuration approaches to the study of strategy (e.g., Miller, 1983; Miller & Friesen, 1982, 1983), organization theory (e.g., through Katz & Gartner, 1988), and eventually cognitive psychology (notably through Baron, 1998; Busenitz & Barney, 1997; and Fiske & Taylor, 1984; 1991). Seen from this angle, the field's last 25 years appear to have evolved through two cycles of convergence–divergence: from the early 1980s characterized with a somewhat narrow anchoring on personality psychology, the field went to a period of more diverse underpinnings in the late 1980s, and then back to a more narrow anchoring on economic theories, ultimately to emerge in the early 2000s with a wider array of disciplinary anchors.

In turn, these observations suggest that if there ever was conceptual convergence in entrepreneurship research, this convergence was rather fluid, with different topics, concepts, and perspectives attracting scholars over the years. At the same time, however, we remark that through these cycles of convergence–divergence, the field has come to increasingly rely upon itself. While the most-cited theoretical anchors tended to lie outside of entrepreneurship research through most of the 1980s and 1990s (e.g., in social psychology or strategic management publications), we observe in latter years an increasing number of frequently cited theoretical references that were authored by scholars specifically associated with the field of entrepreneurship (e.g., Covin, Gartner, Lumpkin, Shane, Venkataraman, Zahra, among others). Likewise, an increasing number of those frequently cited conceptual anchors were published in entrepreneurship-specific journals (*Entrepreneurship Theory and Practice*, *Journal of Business Venturing*) or in management journals (*Academy of Management Review*)—as opposed to disciplinary-based publications in economics, psychology, or sociology. This is not to say that entrepreneurship scholars do not draw from the disciplines (cf. Low, 2001): references to works in Austrian economics, social capital, and social–cognitive psychology attest to the contrary. However, it is notable that a number of entrepreneurship-specific references appear alongside those discipline-based anchors. In turn, this observation suggests that the conceptual forces that drive entrepreneurship research are increasingly taking shape within the field itself.

By extension, this evidence also points to the potential contribution(s) that the field of entrepreneurship may ultimately make to the management sciences in particular, and to the social sciences in general. In this regard, it is notable that unlike other management areas, entrepreneurship research is not dominated by conceptual anchors from a single discipline. Indeed, the co-citation networks of the latter period indicate that as an invisible college, the field of entrepreneurship still draws from a number of disciplines across the social sciences—including various perspectives from economics, psychology, and sociology.

The Extent of Convergence in Entrepreneurship Research

That being said, it is important to observe that overall, the levels of convergence observed in the present study are still relatively low. For instance, Figure 1 shows that the most frequently cited reference over the entire 1981–2004 period (Schumpeter, 1934) is found in only 69 of the 960 articles studied—or 7.19% of the corpus. Similarly, only 12 references are cited more than 34 times (i.e., in more than 3.5% of the corpus). Comparable levels of citation frequencies can also be observed for each of the periods analyzed,

with the most cited works rarely found in more than 5% to 6% of the relevant articles of each period.

These observations are consistent with Ratnatunga and Romano's (1997) findings about small business research, where the most frequently cited title appeared in only 38 of 725 articles (5.24%). By comparison, the most frequently cited works in the *Strategic Management Journal* over the 1980–1993 period (i.e., Chandler, 1962; Porter, 1980; Rumelt 1974) appeared in 31.9%, 23.9%, and 18.1% of the journal's 599 articles for the period (Déry, 1997a, 1997b), respectively. Ten other works also appear in more than 10% of these articles.

From this point of view, the extent of conceptual convergence in the FER articles would appear relatively low. Still, it is important to bear in mind that by nature, proceedings like those of the Babson College Entrepreneurship Research Conference are likely to be more eclectic than proceedings from a conference with a narrower focus, or even from a journal with a particular editorial agenda. As a further point of comparison, an earlier study noted that the most cited titles in the *Journal of Business Venturing* between 1986 and 1993—MacMillan et al. (1985) and Porter (1980)—were found in 13.1% of the articles (Déry & Toulouse, 1996).

More importantly, however, we remark that if anything, the extent and level of conceptual convergence in the field may be increasing. First, we observe that over the four periods considered in this study, the sheer number of works cited in more than 2.5% of articles for a period consistently increased, from 31 in 1981–1986 to 44, 71, and 138 in subsequent periods. Second, we note that the number of highly cited references that were regularly co-cited with others systematically increased, from 13 in 1981–1986 to 27, 33, and 76 in subsequent periods. Third, and perhaps more importantly, we observe that over the years, those groups of co-cited references are increasingly “denser.” This is evidenced in the increasing number of co-citation links within groups of references repeatedly cited together. This is also notable in the relative strength of the co-citation links between those references (cf. the co-citation indices displayed on the lines in Figures 1–5). Without calculating formal measures of average network density for each period, one can observe a slight increase in the average value of co-citation indices, going from slightly above 0.6 in 1981–1986, to somewhere near 0.7 in 1999–2004—and that even as the number of clusters and most frequently co-cited references also increase.

Taken together, these observations suggest that the corpus of key references from which entrepreneurship scholars are drawing is increasing in size. But it also indicates that entrepreneurship scholars are increasingly relying not on one or two key references that have pioneered a particular concept, approach, or topic, but on consistent *sets* of convergent references. This further implies that over the years, the axes of convergence animating entrepreneurship scholars have become increasingly more articulated. In Gartner's terms, this points to the existence of distinct communities of entrepreneurship researchers who already engage “in dialogue about a specific set of problems and issues (. . .), who hold similar beliefs about the relevance of certain methods for solving these problems (. . .), (and who) actively engage in the creation of a systematic body of information” (2001, p. 34–35).

Limitations and Avenues of Future Research

Naturally, the evidence presented above is bound by its reliance on a single source of references—articles published in FER. While we showed this source to be pertinent, and observed that our aggregate results were consistent with that of others, the ultimate validity of our findings would be increased if we conducted systematic comparisons with other sources of entrepreneurship articles, for instance by focusing on entrepreneurship-specific

journals (e.g., Déry & Toulouse, 1996; Ratnatunga & Romano, 1997; Romano & Ratnatunga, 1996), and/or on entrepreneurship articles published in management journals (e.g., Busenitz et al., 2003; Ireland et al., 2005). By extension, investigating the various forces that drive progress in the field would demand to go beyond analysis of the most-cited works: to this aim, one could use co-occurrence techniques to consider relationships between authors (e.g., Reader & Watkins, 2006), institutions (e.g., Déry & Toulouse, 1996), or the use of particular concepts, approaches, and variables with particular methods (e.g., Grégoire et al., 2002). Further insights in this vein could also be gained through systematic comparisons with other disciplines, notably with neighboring fields such as organizational behavior (e.g., Culnan et al., 1990), organization theory (e.g., Aldrich et al., 1994; Astley, 1985), or strategic management (e.g., Déry, 1997a, 1997b). Ultimately, such endeavors would further an explicit understanding of the nature and grounds of knowledge in entrepreneurship research, amounting to the field's distinctive epistemology.

Conclusion

In the end, our results show that there *has* been convergence in entrepreneurship research over the last 25 years. If the overall levels of this convergence have remained comparatively low, the nature of this convergence has neither been stable, as older conversations tired off and new ones are arising. More importantly, we observed that through cycles of convergence and divergence, the field of entrepreneurship research continues to draw from a wide array of disciplines. But in addition, it also relies increasingly on scholarly discussions that are articulated within the field itself.

All in all, this suggests that concerns about the field's level of convergence are not necessarily an issue of the field being in its infancy, in its adolescence, or at maturity (cf. Davidsson et al., 2001; Low, 2001; Low & MacMillan, 1988). As we indicated when reviewing research on the idea of scientific convergence, there is little reason to expect high levels of convergence to arise in a field like that of entrepreneurship research. Seen in this light, calls for conceptual convergence in entrepreneurship research run against scientometric evidence, and may be based on false assumptions about the nature of our field. Yet, this does not imply that entrepreneurship is condemned to remain a “hodge-podge” (Shane & Venkataraman, 2000) or “potpourri” (Low, 2001) of research streams that share little in common. Our evidence suggests that if the field does advance, it is through the work of scholars who succeed in drawing the attention of others around some key ideas—echoing in that sense Aldrich and Baker's observations (1997, p. 398).

Interestingly, our results suggest that if communities of scholars already agree on particular concepts and approaches (and share consistent sets of convergent references), an important challenge remains in articulating the relationships *between* these concepts and approaches. This may demand that entrepreneurship scholars position their work in line, against, or as complement to those of different research communities. Still, the mix of within-group convergence and overall diversity of disciplinary anchors remind us that entrepreneurship research is neither plagued by the conformism of a single paradigm, nor by the anarchy of total fragmentation. If such is the case, what better place then to find rich opportunities for building these conceptual relationships?

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Denis A. Grégoire is assistant professor of strategy and entrepreneurship for Georgia State University's J. Mack Robinson College of Business, and is associate research scholar with the Roger-J.A. Bombardier chair of entrepreneurship at HEC Montréal. Denis' research centers primarily on the cognitive processes supporting strategic thinking and decision-making, managerial insight, and the acknowledgment of potential opportunities.

Martin X. Noël is assistant professor of management and strategy at the Université du Québec en Outaouais. His research centers on the epistemology of management sciences.

Jean-Pierre Bécard is associate professor at HEC Montréal and associate scholar with the Roger-J.A. Bombardier chair of entrepreneurship. His research focuses principally on management and entrepreneurship education, and on the development of pedagogical innovations in higher education.

Richard Déry is professor at HEC Montréal. His research focuses on epistemology.

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