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Scholarly Communities in Entrepreneurship Research: A Co-Citation Analysis

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A debate persists about the distinctiveness of entrepreneurship research. Entrepreneurship research is seen as fragmented and its results are considered noncumulative, handicapping the evolution of the field as a respected scholarly discipline. In this article we conduct a bibliometric analysis to shed light on these issues. We analyze co-citation patterns of entrepreneurship-related articles published in the years 2000 to 2004 and identify the 25 most central research streams in entrepreneurship. We describe these groups and investigate their mutual relationships. Although the United States represents by far the greatest source of entrepreneurship articles, other countries represent significant sources of research in specific streams.

Research on entrepreneurship has been often characterized as diverse, fragmented, and still being in ferment (Gartner, 2001; Shane & Venkataraman, 2000). There is no widely accepted categorization of different streams of entrepreneurship research, and it is not even clear if distinct streams exist. Such lack of clear research trajectories risks inhibiting the growth of entrepreneurship as a scholarly endeavor (Zahra, 2005). Although a considerable diversity in the field across countries has been noted, there is little systematic knowledge regarding country- or continent-specific differences in entrepreneurship research (Aldrich, 2000).

This study addresses these gaps in our understanding of the field by mapping out the structure of entrepreneurship literature. We do so by examining highly cited references in contemporary entrepreneurship research. Our data set consists of all articles published during the last five years in leading journals with entrepreneurship-related content. Although our article is descriptive in nature, we utilize quantitative analysis to identify and analyze different groups of closely connected articles. Specifically, popular references

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are divided into distinct and coherent groups utilizing a novel algorithm designed specifically for bibliometric use. The characteristics of those groups are also described.

Our research reveals 25 distinct groups of studies, attesting to the diversity *and* fragmentation of past entrepreneurship research.[1] However, because of space limitations, we only present graphically the 10 most cited groups. We then describe the characteristics for each of these groups. Finally, we show how different groups of studies relate to each other, and examine the recent trends in citation patterns across the groups.

Methodology and Data

Citation analysis is a major bibliometric approach (Osareh, 1996, p. 149) originating from information sciences. Although still relatively new, bibliometric analysis has also found some advocates in the field of entrepreneurship (Etemad & Lee, 2003; Ratnatunga & Romano, 1997). Bibliometric analysis is founded on the assertion that citations can be used as indicators of present and past activities of scientific work (Garfield, 1983, p. 180; Garfield, Sher, & Torpie, 1964, p. i; Small, 1973, p. 268).

Citation analysis has covered macro and micro studies. Macro studies are interested in the overall structure of disciplines and the laws that govern the evolution of science. Micro studies usually describe the structure and development of individual disciplines or schools of research and their interdependencies (Gmur, 2003, p. 30). Our study belongs to the micro-oriented stream of research.

Data

To understand trends in entrepreneurship research, the Social Sciences Citation Index (SSCI) of the ISI Web of Science was used to retrieve citation data. SSCI indexes 1,750 journals over 50 social science disciplines, adding approximately 60,000 new cited references per week. We initially searched for all articles with words beginning with "entrep*" in their abstract, title, or keywords from the ISI Social Sciences Index published during the 2000 to 2004 period.[2] This resulted in an initial data set of thousands of articles with over 100,000 cited references. We first deleted all articles that had less than three references, effectively excluding book reviews and editorial pieces with limited scope (e.g., journal editorial policies). These sources were unlikely to provide data regarding typical connections between prior works. To concentrate on ongoing discussions in the field about entrepreneurship phenomena, we then identified 30 journals with entrepreneurship-related articles (see Appendix 1), and excluded articles from all other journals. This generated 733 articles with references to over 21,000 sources.

Analysis

In a typical bibliometric analysis, the relationship of cited references is evaluated based on the co-occurrence of references within articles. Co-citations represent a link between two documents, indicated by competent specialists, namely the authors of latter scientific articles. Thus, if two articles are cited in the same paper, they are closely related

1. Maps of all 25 groups are available upon request from the first author.
2. Although we considered expanding the list of keywords to cover a broader set of entrepreneurship research, we felt that this would risk biasing the findings toward areas we are particularly familiar with.

to each other either because they belong to the same topic area or because their topic areas are closely connected (Cawkell, 1976, p. 544; Garfield, 1983, p. 185; Small, 1973, p. 265). Even though many co-citations may be quite unrelated in each individual article, a sufficiently large sample of cited articles enables researchers to mitigate the random "noise" created by some articles that focus on diverse topics or streams.

The network, extracted through linking similar references, is called "co-citation network." Given that 1,667 articles selected for analysis had over 40,000 cited references, it was impossible to include all of them in the analysis. Typically, the researcher has to set a threshold regarding the popularity of the references contained in the analysis, leaving out information on cited documents that do not have a significant impact (Small & Greenlee, 1980, p. 278). The literature does not offer guidance on how to select a particular threshold level. Consequently, in this study, a citation frequency threshold was chosen by investigating citer–cited networks with different thresholds. An increasing threshold reduces the number of prior works included, and it also lowers the number of contemporary articles used to build the analysis. Our aim in conducting these analyses was to find an appropriate level that excluded only less related documents. Therefore, we searched for a level where the citing documents remained constant. After testing several networks, we included all prior works with at least 15 references from our sample of 733 articles. The networks resulting from these analyses are available on request.

Next, following prior research, we constructed a co-citation network using the normalized co-citations strength measure using the Jaccard index (Small & Greenlee, 1980, p. 279). Normalization emphasizes proximate relations between similar references that are not cited as often as the most common references (Gmur, 2003, p. 30). The value of the link (S) between two citations ranges from 0, representing no co-citations, to 1, representing perfect co-appearance in subsequent articles.

$$S = \frac{\text{Number of common citations to articles A and B}}{(\text{Total citations to A} + \text{Total citations to B} - \text{Co-citations of A and B})}$$

Clustering or grouping the references highlights the intellectual structure (e.g., Culnan, 1987, p. 341; Small & Griffith, 1974, pp. 17–40). Clustering algorithms rearrange the documents, placing the most similar cited articles closest to each other through an iterative algorithm. The two most popular clustering approaches in bibliometric research are "hierarchical agglomerative" and "iterative partitioning," which could be interpreted as "bottom-up building" versus "top-down splitting" techniques (McCain, 1990, p. 437). These clustering algorithms appear suboptimal for our purpose for several reasons.

A problem with both clustering approaches is that they place all the articles in at least one group. This is problematic when highly cited articles are referenced very diversely, making it difficult to assign the article to any cluster. It is also difficult to *ex-post* evaluate whether or not the placement in a cluster by the algorithm depended on very small differences. To identify dense groups of articles and leave diversely cited references out of the resulting groups, we utilized an algorithm, *dense subnetwork grouping* (Schildt & Mattsson, 2006). The analysis is implemented in a bibliometric software tool, Sitkis (Schildt, 2005).

The algorithm forms a group from the dyad that is most commonly cited together, and then iteratively adds nodes that have the highest average tie strength with the existing members of the group, until the average tie strength is below a preselected cutoff value. The resulting group is then removed from the network, and the algorithm starts from the beginning. This iteration yields a number of independent, densely connected groups and

a list of disconnected nodes. The algorithm differs from mathematically elegant clustering algorithms, as it takes a much more computing intensive "brute force" approach, unsuitable for less powerful home computers.

We experimented with different cutoff values for selecting the groups. The higher the cutoff value, the smaller each independent group becomes. Conversely, a lower cutoff value generates a larger number of the groups. Given the absence of established criteria for selecting a cutoff value for the minimum density of a group, we examined different minimum average tie strengths (Jaccard index values 0.10, 0.15, 0.2, 0.25, and 0.30). After evaluating different alternatives, we set a cutoff value of 0.15. A lower value would have merged different groups, while a higher value would have generated even smaller groups of articles. As will become evident when we discuss the relationship of different groups and the relations of articles within groups, the general information available to the reader does not depend greatly on the chosen value. The results are thus robust to the choice of the parameters.

With the minimum of 15 citations necessary for included articles, and the Jaccard index value of 0.15 for the average intragroup tie strength, the algorithm identified 25 groups of articles.[3] Because of space limitations, we only show the 10 most cited groups of references, although descriptions for all groups are given.

Highly Cited Groups of Prior Work on Entrepreneurship

In this section, we present graphs and descriptions of the 10 most cited groups of literature in entrepreneurship (see Figures 1 and 2). The other 15 groups are summarized in Table 1. Each group reflects a distinct theme in entrepreneurship research, although many of the groups are related. This interrelatedness highlights the growing recognition of entrepreneurship scholars to borrow from others and develop influential research agendas. Given that we were interested exclusively in most cited and coherent groups of prior works, some of the highly cited individual references are excluded from the analysis. We encourage readers who are interested in the popularity of cited groups arranged by journal or by country to refer to Appendices 2 and 3.

A. Entrepreneurial Networks and Resource Accumulation

In this densely cited group, the focus is centered on entrepreneurial networks and their role in resource accumulation and assembly. Grounded in sociological theories, these studies analyze the nature of entrepreneurial networks and how they differ from other types of networks, the roles that these networks play in transmitting knowledge and resources, the various types of networks and how they complement (or substitute) each other, and the growing importance of social and relational capital in determining the success and failure of new and other venture activities.

B. Corporate Entrepreneurship and Venturing

Studies in this group focus on the nature and consequences of corporate entrepreneurship, including venturing. These studies also examine the factors that encourage

3. Increasing the minimum threshold value from 0.15 to 0.25 did not change the groups materially (although the size of the groups was reduced). Reducing the minimum number of citations required for an article to be included would increase both the number of groups and articles per group. Arguably, the criteria for choosing the population of "important" articles are a matter of judgment.

Figure 1

Groups of Highly Cited References (A–D)

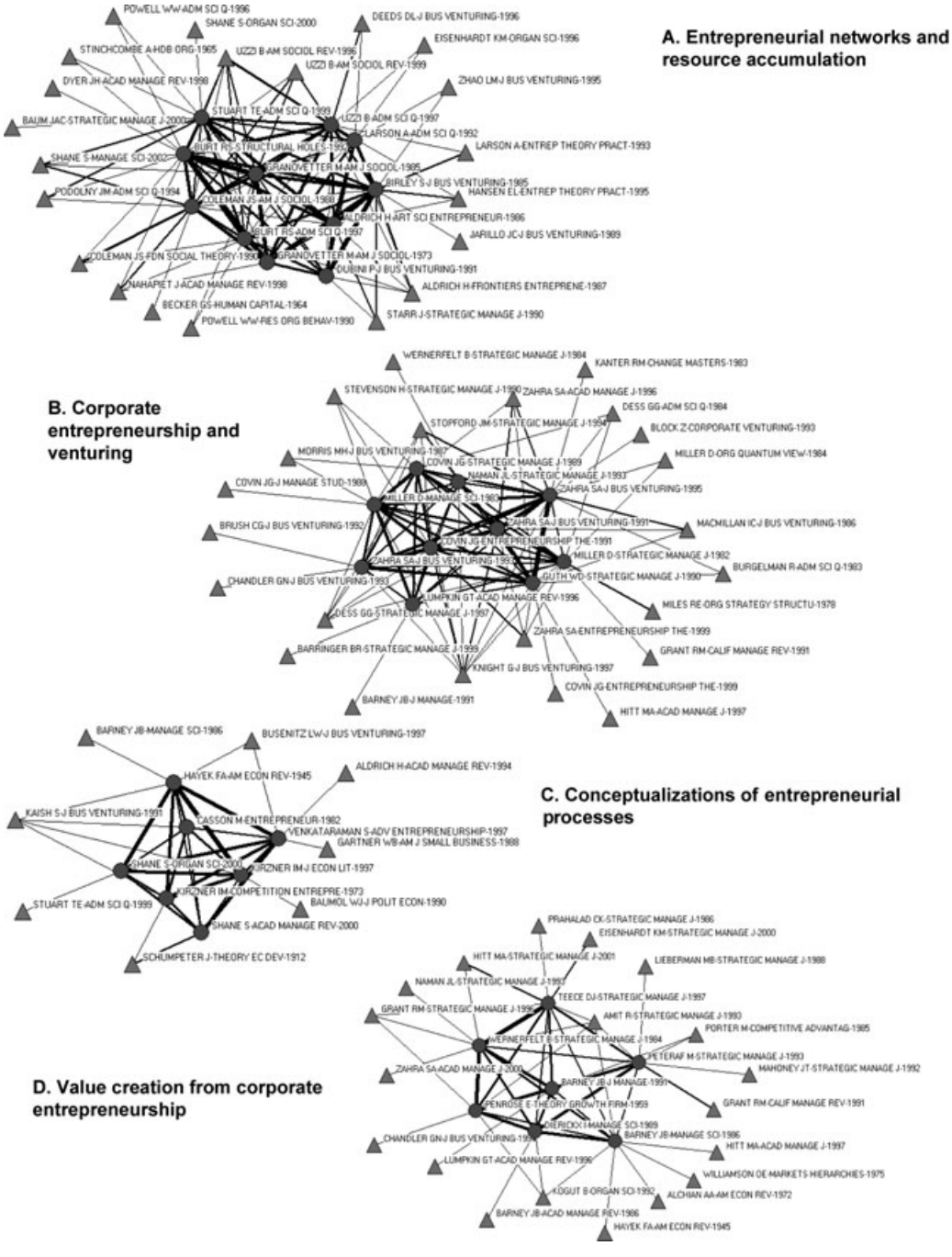
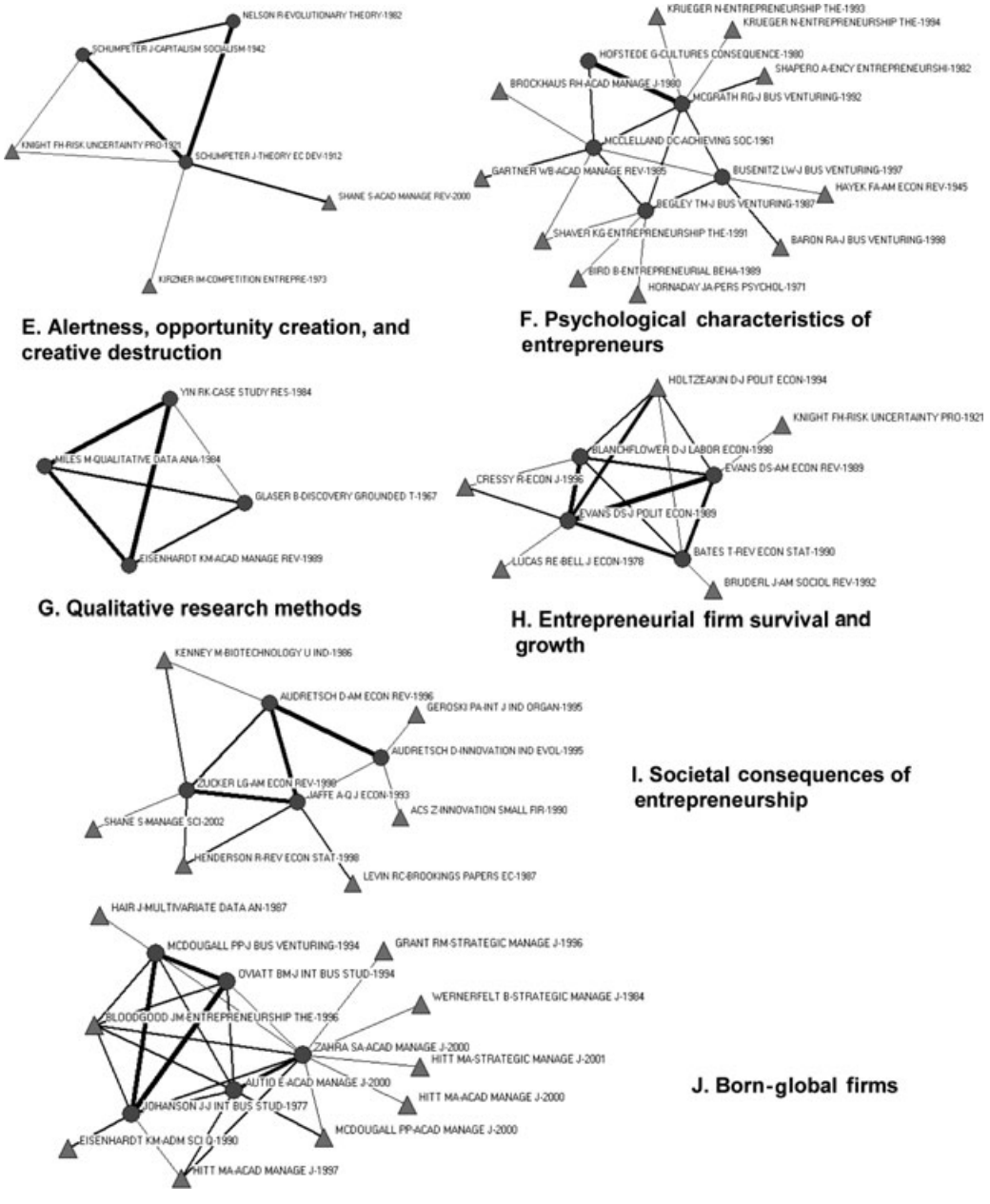


Figure 2

Groups of Highly Cited References (E–J)



companies to engage in corporate entrepreneurial activities. Studies cited in this group also explain the differences between independent and corporate entrepreneurship and their contributions to wealth creation. This is one of the most densely populated groups in our analyses, attesting to the strong interest in the various studies cited within this stream of

research. At the center of this group of studies are several early papers that explain the nature and importance of corporate entrepreneurship.

C. Conceptualizations of Entrepreneurial Processes

Studies that belong to this group could be thought of as the foundation of the field of entrepreneurship as a scholarly discipline. They discuss the various stages of the entrepreneurial process (Shane & Venkataraman, 2000) and the nature of "creative destruction" that gives birth to new firm creation (Schumpeter, 1934). Most of these studies discuss entrepreneurs and what they do to differentiate themselves from the rest of the population, as evidenced in the recognition and discussion of entrepreneurial alertness (Kirzner, 1973).

D. Value Creation from Corporate Entrepreneurship

These studies explain value creation in entrepreneurial activities that occur in established companies. These explanations emphasize the resource- and knowledge-based theories. Also, the studies highlight the role of these activities in building the firm's core competencies and dynamic capabilities, providing a foundation for competitive advantage. Studies cited in this group also discuss the firm's tangible and intangible assets and how they are leveraged to create value through entrepreneurship. Researchers highlight the importance of the firm's entrepreneurial orientation in this process. The density of the citations evident in this group shows the growing body of research on these topics. Clearly, this group reinforces and complements those studies contained in Group C.

E. Alertness, Opportunity Creation, and Creative Destruction

These studies examine the nature of the entrepreneurial process, especially the processes described by Schumpeter's "creative destruction" that generates important opportunities. Other studies included in this group examine how individuals spot opportunities and evaluate the potential payoff from them. This research also highlights the role of entrepreneurial alertness in spotting and choosing opportunities for new business creation (Shane, 2000).

F. Psychological Characteristics of Entrepreneurs

This group contains some of the key writings about the factors that distinguish entrepreneurs from non-entrepreneurs, including those that differentiate between independent and corporate entrepreneurs. Grounded in the psychology discipline, these studies offer rich insights into why certain individuals undertake the various steps associated with the entrepreneurial process. Researchers who cite these studies have also shown an interest in the domain of entrepreneurship as a field, especially its focus on new business creation as a distinguishing characteristic (Gartner, 1985).

G. Qualitative Research Methods

Studies in Group G focus on how to use case studies and other qualitative methods to develop and test theories. This group contains methodological works that do *not* themselves belong within entrepreneurship research, but are commonly used in studies of

Table 1

Fifteen of the 25 Most Cited Groups (K to Y) of Literature in Entrepreneurship

	Name	Short description	Representative works
K	Institutions and institutional entrepreneurship	This group examines social institutions, including their potential effects of organizational liabilities. Institutional entrepreneurship and new firms' attempts to manage these liabilities are also discussed.	(Aldrich & Fiol, 1994; Dimaggio & Powell, 1983)
L	Top management characteristics and success	Building on strategic management and organization theory (especially the upper echelon theory), these studies examine the role of top management teams in defining the firm and its mission, resource assembly, internationalization, and mitigating the liabilities of newness.	(Cooper, Gimenogascon, & Woo, 1994; Eisenhardt, 1989)
M	Searching for the essence of entrepreneurship	These studies discuss and debate the nature of entrepreneurship and the entrepreneurial act. Although different in their conclusions, these studies define the boundaries of the field by combining explanations from sociology, psychology, and other disciplines.	(Gartner, 1988; Katz & Gartner, 1988)
N	Liabilities of newness and survival mechanisms	These studies examine liabilities of newness and their sources. These liabilities are accentuated by findings about organizational mortality, as revealed by empiric research into population ecology. Survival mechanisms, including building and creatively harvesting network relationships and developing dynamic capabilities are represented in works citing this group.	(Hannan & Freeman, 1984; Stinchcombe, 1965)
O	Knowledge-based view of the firm	Studies in this group analyze how companies create and exploit their knowledge to add value and how knowledge creation is linked to social and relational capital. Relationships that alter the stock and flows of a firm's knowledge and the value it derives from its other resources are examined.	(Cohen & Levinthal, 1990; Kogut & Zander, 1992)
P	Trust and relational capital	Two themes are present in this group. The first examines trust and its nature and consequences for the creation of social capital. Issues addressed are: the origin of trust, the conditions that foster trust, and dimensions of trust. The second theme centers on network and relational capital, examining how companies capture and use knowledge from networks to create value.	(Nahapiet & Ghoshal, 1998; Powell, Koput, & SmithDoerr, 1996)
Q	Risk-taking among entrepreneurs	This group consists of two themes on risk-taking. The first strand, centered around Shaver, typically focuses on the motivations that prompt risk-taking by entrepreneurs. The second strand, centered around Gartner, emphasizes how entrepreneurs calculate risks and returns and how they process this information to make their decisions to create new businesses.	(Gartner, 1985; Shaver & Scott, 1991)
R	Environmental determinants of entrepreneurial success	Building on organization theory and strategic management, studies in this group focus on the external environment of new and established firms and how they influence the payoff from these companies' entrepreneurial efforts.	(Chandler & Hanks, 1993; Sandberg & Hofer, 1987)
S	Statistical methodology	Not specifically related to entrepreneurship, this group contains sources focusing on various statistical issues such as multiple regression analysis and surveys.	
T	High-technology entrepreneurship	Studies in this group examine the factors that influence the propensity to undertake the various steps to transform scientific discoveries into new firms. These studies also examine the relative effectiveness of various means of protecting related intellectual property rights.	(Arrow, 1962)

Table 1

Continued

	Name	Short description	Representative works
U	Leadership and top management teams	These studies examine the impact top leadership has on the firm. A key stream in this literature, centered on agency theory, examines the potential conflicts between the founder and his/her organization, as well as conflicts within the top management team.	(Fama & Jensen, 1983)
V	Organizational decision-making theory	Studies in this group utilize the behavioral theory of the firm in framing their discussions of the emergence of new firms and explaining how their managers make key decisions.	(Cyert & March, 1963)
W	Organizational learning and problem-solving	This group focuses on the role of knowledge in resolving key problems firms face. They examine how firms accumulate and deploy their knowledge, how ventures might learn and unlearn, and how they use this learning in addressing the challenges posed by their success and industry changes.	(Eisenhardt, 1989)
X	External triggers of industrial change, exploration, and entrepreneurship	The focus of this final group is on the external forces that create technological and other market discontinuities that usher in new opportunities and changes in the paradigms that determine competition in an industry. The senior managers' cognitions and interpretations represent a central theme in this group of studies.	(March, 1991; Tushman & Anderson, 1986)
Y	Survival of firms	These studies examine the factors that determine variations in survival rates within and across industries. They invoke multiple explanations of these variations relying on sociological and economic theories as they investigate fairly large samples over a longer period of time than done in other areas within the field of entrepreneurship.	(Bruderl, Preisendorfer, & Ziegler, 1992)

entrepreneurship. The same methodological articles (e.g., Eisenhardt, 1989) are also commonly cited by students of strategic management and organization theory.

H. Entrepreneurial Firm Survival and Growth

Studies cited in this group discuss the nature, magnitude, and sources of risks that entrepreneurial firms encounter. Authors also analyze survival strategies that allow these firms to exist, succeed, and even grow. Researchers integrate multiple theoretical approaches in theorizing about and examining the content of these strategies. This group is conceptually related to Groups K and N.

I. Societal Consequences of Entrepreneurship

Studies in this group are preoccupied with documenting the economic and societal importance of new firms in terms of innovation, job creation, and wealth creation. These researchers suggest that new firms make a significant societal difference, although their contributions vary from one industry setting to another. An important stream of research within this group has focused on delineating the approaches entrepreneurs use to protect their discoveries. Clearly, this body of research has important implications for public-policy makers who are interested in stimulating entrepreneurship at the regional and national levels.

J. Born-Global Firms

This group of studies examines the factors that influence the internationalization of firms with special attention to the resource and knowledge-based explanations. Researchers citing these studies focus on the born-global phenomenon (Oviatt & McDougall, 1994) and the multiple factors that lead to the early and rapid internationalization of new firms. Studies highlight the differences between early and late internationalizing firms and their distinct sources of competitive advantage. These studies also explore the consequences of internationalization such as firms' technological learning (Zahra, Ireland, & Hitt, 2000) and acquisition of new resources, knowledge, and capabilities (Autio, Sapienza, & Almeida, 2000).

Interdependence of the Identified Scholarly Communities (Groups)

Figure 3 shows the relative frequencies through which recent articles utilize the groups revealed in our analyses. The most central groups are A, C, D, and E, which bridge a number of smaller and less central groups. The groups that embody works that are specific to entrepreneurship as a scholarly specialty dominates the lower left corner of

Figure 3

Relationship between Groups (Relations with 15% or More Common Citations Depicted)

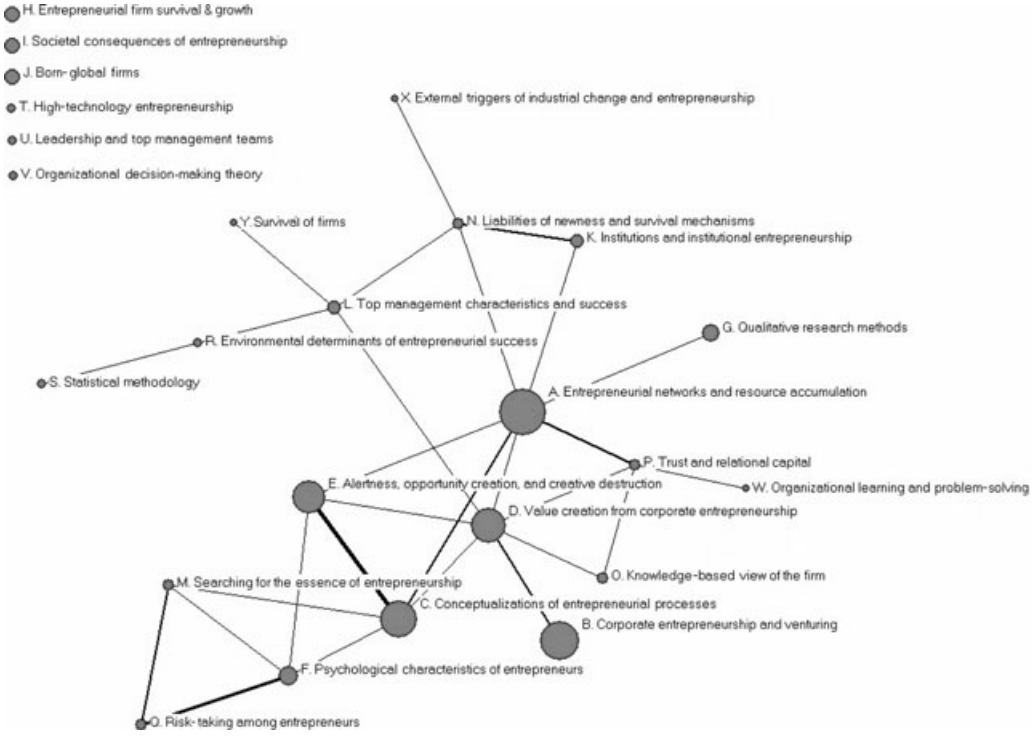


Figure 4

The Number of Citations Received by the 10 Most Cited Groups Yearly

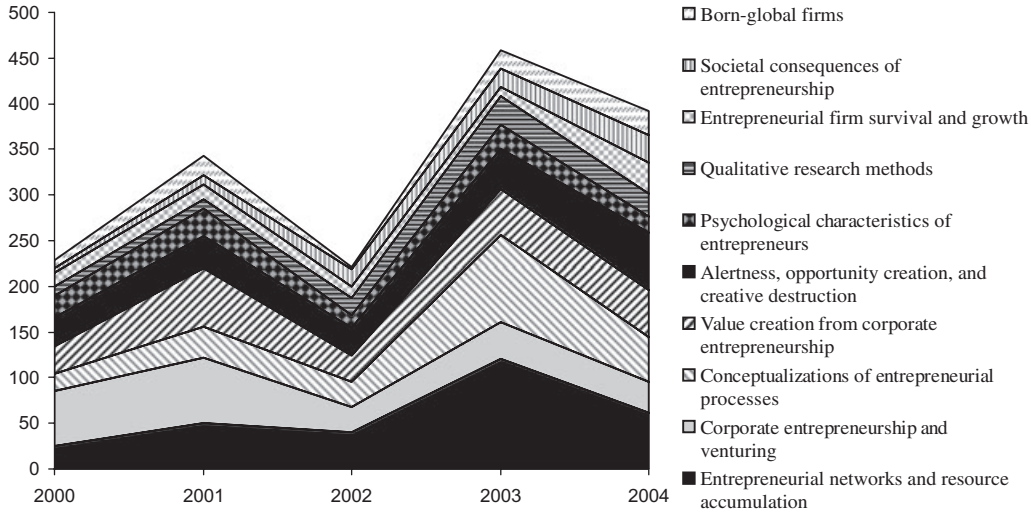


Figure 3, whereas the top and right side of the figure are populated by more generic streams of literature originating from organization theory, strategic management, and other disciplines. Interestingly, Group B (corporate venturing) remains quite distinct from other streams of literature, whereas Group D (value creation from corporate venturing) is commonly co-cited with literatures related to networks, resource accumulation, entrepreneurial opportunity recognition, and entrepreneurial processes.

Groups B (networks), K (institutions), and N (liabilities of newness), which represent the most sociologically inclined approaches, are commonly utilized together. However, only the network theoretical approaches (Group B) have been picked up and utilized together with theoretical approaches specific to entrepreneurship research. Groups F (entrepreneurs' characteristics), M (essence of entrepreneurship), and Q (risk-taking) all represent psychological approaches, and are thus commonly cited together. The theoretical ideas from these groups appear to be quite central to entrepreneurial processes (Groups C and E).

Temporal Shifts in the Popularity of the Groups

Many scholars are interested in the development of the entrepreneurship field and potential trajectories of particular topics of interest. Therefore, we have evaluated the shifts in the importance of each individual group over the years included in the study (2000–2004). To illustrate the relative popularity of the groups identified in this study, Figure 4 shows the number of citations received by each of the groups during the 2000–2004 period. Given that the number of citations received by each of the groups is not equivocal, great care should be exercised in drawing any conclusions from our data since there are annual fluctuations in publication activity. For example, citations of entrepreneurial processes and orientation (Group C) and opportunity creation (Group E) articles

appear to be growing significantly. Simultaneously, citations of corporate entrepreneurship (Groups B and D) and psychological studies on entrepreneurship (Group F) seem to be on the decline.

Discussion and Conclusion

Bibliometric analysis provides an interesting and revealing window into scholarly work. Based on the rich panorama opened by our data, many stories can be told: stories of scientific advance, overlooked opportunities, alternate viewpoints, or perhaps the politics within academia. Given the widely acknowledged diversity of the entrepreneurship field, alternate stories are bound to be of interest to different audiences. Clearly, our results are open to many alternate interpretations and we invite the readers to make sense of them from their own perspectives. Our hope is that this article has provided material that readers will find easy, enjoyable, and useful in interpreting key themes of contemporary entrepreneurship research.

Our analyses reveal four key qualities about research in entrepreneurship. First, this research remains highly fragmented, perhaps reflecting the "pre-paradigmatic" stage of the field (Zahra, 2005). Second, research findings appear to be noncumulative, evidenced by the limited citations of prior published works in the areas canvassed in our analyses. This could further limit the scholarly evolution of the field and its progress. Third, although entrepreneurship research is mostly centered on the United States, other countries exhibit their own strong traditions. Fourth, and finally, even research in areas that are widely considered at the core of the field of entrepreneurship (e.g., new venture creation) is not highly cited by others outside the field, reinforcing the growing sense of isolation that some entrepreneurship researchers have come to experience in their own departments and universities. This also underscores the possibility that entrepreneurship researchers do not communicate their findings well to others outside their immediate "territory," which limits the impact of their research and its potential contributions.

That being said, several limitations of our analysis should be recognized. This article presented a brief look at 25 groups of researchers who study particular themes that were most commonly cited by entrepreneurship articles. This is only the tip of the proverbial iceberg, because more recent research is making a significant impact on the field. Furthermore, it is difficult to define the group of articles constituting "entrepreneurship." For instance, articles related to venture capital might have been left out of our sample, and it is legitimate to question whether or not they would centrally belong to the field of entrepreneurship. Our use of aggregate data from the years 2000 to 2004 also creates a heavy bias in favor of those references that have been published before the year 2000. Also, one should be slightly skeptical about the "popularity" of groups, as it is based on received citations. People cite articles with different reasons, and therefore the popularity of the groups does not necessarily represent their scholarly importance to theoretical argumentation or empirical findings within the field. Finally, to analyze the data, we developed a novel network-based algorithm, *dense subnetwork grouping*. It was developed specifically for the analysis of commonly cited groups and differs from existing clustering algorithms in that it leaves our articles that are cited diversely in a multitude of contexts (Schildt & Mattsson, 2006). As there is no established genre of bibliometric articles, there are also no generally accepted guidelines for judging the "quality" of the analysis. Still, we believe that the presentation of the most important groups together with a network showing the interrelatedness of these groups offers an interesting picture of the current state of the entrepreneurship field.

Clearly, several issues remain open for future analysis. Specifically, it would be useful to examine more recent and even less cited works that were excluded from our study and discern alternate "groupings/themes." It would also be informative to conduct alternate analyses that complement the picture of the field that we presented in this article. Consequently, future studies should be more inclusive and systematically screen articles related to the topic area. Future studies should also consider alternate analyses of the articles published exclusively within dedicated entrepreneurship journals, the specific analysis of the most recent references, and the use of cited authors instead of cited articles as the unit of analysis. These and other alternate methodological approaches can enrich our understanding of entrepreneurship research and the linkages that exist across various groups of universities, scholars, and theoretical perspectives. Entrepreneurship researchers need to talk to each other and, perhaps more important, connect their ideas and findings to mainstream disciplines. Opening this dialog can enrich future entrepreneurship research and increase its acceptance and academic legitimacy.

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Appendix 1

Journals Included in the Study

Journal Name	Total articles	Journal Name	Total articles
Journal of Business Venturing	123	Economic Development Quarterly	17
Small Business Economics	97	Regional Studies	16
Entrepreneurship & Regional Development	48	Management Science	15
Journal of Small Business Management	38	Journal of Evolutionary Economics	15
Research Policy	34	Academy of Management Journal	14
Business History	30	Organization Science	14
Strategic Management Journal	28	International Journal of Urban and Regional Research	14
Technovation	26	European Planning Studies	14
International Small Business Journal	26	Entrepreneurship Theory and Practice (ETP)*	14
Business History Review	23	Journal of Business Research	13
Journal of Business Ethics	22	Organization Studies	13
Journal of Managemenet	19	R&D Management	13
Academy of Management Review	18	Journal of Management Studies	12
Urban Studies	17		

* ETP is only covered from year 2003 onward in the ISI Web of Science.

Appendix 2

The Most Cited Groups by Journal

	A	B	C	D	E	F	G	H	I	J
Journal of Business Venturing	27	24	38	27	25	21	16	12	4	11
	22%	*25%*	*31%*	*24%*	*16%*	*29%*	*24%*	*21%*	*8%*	*28%*
Small Business Economics	11	5	10	5	20	2	2	22	12	7
	9%	*5%*	*8%*	*5%*	*13%*	*3%*	*3%*	*38%*	*23%*	*18%*
Strategic Management Journal	11	9	12	16	10		3	1	3	5
	9%	*9%*	*10%*	*14%*	*6%*		*5%*	*2%*	*6%*	*13%*
Journal of Management	6	7	8	10	9	7	3	1	1	3
	5%	*7%*	*7%*	*9%*	*6%*	*10%*	*5%*	*2%*	*2%*	*8%*
Entrepreneurship & Regional	14	7	4	7	12	6	10	1	2	2
Development	*12%*	*7%*	*3%*	*6%*	*8%*	*8%*	*15%*	*2%*	*4%*	*5%*
Research Policy	7	1	6	2	7	1	5	3	12	
	6%	*1%*	*5%*	*2%*	*5%*	*1%*	*8%*	*5%*	*23%*	
Journal of Small Business Management	3	8	5	3	3	8	2	1		
	2%	*8%*	*4%*	*3%*	*2%*	*11%*	*3%*	*2%*		
Academy of Management Journal	5	6	3	5	3	6	1		1	5
	4%	*6%*	*2%*	*5%*	*2%*	*8%*	*2%*		*2%*	*13%*
Academy of Management Review	3	3	9	5	7	3	1	1		
	2%	*3%*	*7%*	*5%*	*5%*	*4%*	*2%*	*2%*		
Management Science	3	1	7	1	7	2		3	4	
	2%	*1%*	*6%*	*1%*	*5%*	*3%*	*0%*	*5%*	*8%*	
Organization Science	5	1	1	2	2	3	5	1	1	1
	4%	*1%*	*1%*	*2%*	*1%*	*4%*	*8%*	*2%*	*2%*	*3%*
Journal of Management Studies	4	2	3	6	4	2	4			1
	3%	*2%*	*2%*	*5%*	*3%*	*3%*	*6%*			*3%*
Technovation	2	5	2	4	3		5	1	1	
	2%	*5%*	*2%*	*4%*	*2%*		*8%*	*2%*	*2%*	
Entrepreneurship Theory and Practice	3	3	1	4	2	5	1	2	1	1
	2%	*3%*	*1%*	*4%*	*1%*	*7%*	*2%*	*3%*	*2%*	*3%*

Continued

	A	B	C	D	E	F	G	H	I	J
Organization Studies	3	1		1	3	2	3			
	2%	*1%*		*1%*	*2%*	*3%*	*5%*			
Journal of Evolutionary Economics	1		1	2	13			1	3	
	1%		*1%*	*2%*	*8%*			*2%*	*6%*	
Total articles citing the group	121	96	122	111	154	72	66	58	53	40

This table describes the number of articles in each journal (rows) that cite each group of prior work (columns). The percentages are the share of all citations received by a group that originate from the particular journal. Note that percentages do not add up because only the top 16 journals are included in the table.

Appendix 3

The Most Cited Groups by Country

	A	B	C	D	E	F	G	H	I	J	Total articles
United States	68	61	81	71	93	49	26	28	33	24	374
	18%	*16%*	*22%*	*19%*	*25%*	*13%*	*7%*	*7%*	*9%*	*6%*	
England	18	12	16	15	18	6	11	4	3	7	109
	17%	*11%*	*15%*	*14%*	*17%*	*6%*	*10%*	*4%*	*3%*	*6%*	
Canada	14	5	7	5	11	8	8	3	1	4	45
	31%	*11%*	*16%*	*11%*	*24%*	*18%*	*18%*	*7%*	*2%*	*9%*	
Sweden	7	7	12	9	12	6	4	9	2	1	42
	17%	*17%*	*29%*	*21%*	*29%*	*14%*	*10%*	*21%*	*5%*	*2%*	
Scotland	5	1	4	2	3		5	4		4	39
	13%	*3%*	*10%*	*5%*	*8%*		*13%*	*10%*		*10%*	
The Netherlands	1	1	4	1	11	1	2	7	5		33
	3%	*3%*	*12%*	*3%*	*33%*	*3%*	*6%*	*21%*	*15%*		
Germany	3	1	2		9		2	2	5		26
	12%	*4%*	*8%*		*35%*		*8%*	*8%*	*19%*		
Australia	2	3	3	6	6	1	3	2	1		24
	8%	*13%*	*13%*	*25%*	*25%*	*4%*	*13%*	*8%*	*4%*		
Italy	5	1	2	1	4	2	3	3	3		15
	33%	*7%*	*13%*	*7%*	*27%*	*13%*	*20%*	*20%*	*20%*		
Singapore	2	2	4	3	1	2		1		1	15
	2%	*2%*	*3%*	*3%*	*1%*	*3%*		*2%*		*3%*	
France	5	3	3	3	2	1	2		2		14
	36%	*21%*	*21%*	*21%*	*14%*	*7%*	*14%*		*14%*		
Spain	4	2	2	6	4	1		2			14
	3%	*2%*	*2%*	*5%*	*3%*	*1%*		*3%*			
China	2	3		3		1		1		2	13
	15%	*23%*		*23%*		*8%*		*8%*		*15%*	
Israel	4	2	1	2		3	2	3	1		12
	33%	*17%*	*8%*	*17%*		*25%*	*17%*	*25%*	*8%*		
Finland	4	1	1	3	3		1	1	1	2	11
	36%	*9%*	*9%*	*27%*	*27%*		*9%*	*9%*	*9%*	*18%*	
Belgium	1	1			1	1	2		1	1	10
	10%	*10%*			*10%*	*10%*	*20%*		*10%*	*10%*	

This table describes the number of articles in which at least one author from a country (rows) citing a group of prior work (columns). The percentages are the all articles published by an author located in the specific country that cites the group (e.g. 18% of all articles with at least one U.S.-based author cite Group A). Please note that percentages do not add up because each article can cite any number of groups.