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Entrepreneurship Research in Emergence: Past Trends and Future Directions

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This article evaluates the emergent academic field of entrepreneurship to better understand its progress and potential. We apply boundary and exchange concepts to examine 97 entrepreneurship articles published in leading management journals from 1985 to 1999. Some evidence was found of an upward trend in the number of published entrepreneurship articles, although the percentage of entrepreneurship articles remains low. The highly permeable boundaries of entrepreneurship facilitate intellectual exchange with other management areas but sometimes discourage the development of entrepreneurship theory and hinder legitimacy. We argue that focusing entrepreneurship research at the intersection of the constructs of individuals, opportunities, modes of organizing, and the environment will define the field and enhance legitimacy. Decision theory, start-up factors of production, information processing and network theory, and temporal dynamics are put forward for entrepreneurship scholars to explore important research questions in these intersections.

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The nature of entrepreneurship research and the emergence of entrepreneurship as a legitimate academic pursuit have begun to attract the interest of scholars. Aldrich and Baker (1997) claim that the field of entrepreneurship has made only limited progress toward disciplinary status in a normal science framework. Others think that entrepreneurship remains in a theory-building stage (Wiseman & Skilton, 1999) and is a “multidisciplinary jigsaw” characterized by accumulative fragmentalism (Harrison & Leitch, 1996: 69). Examining whether or not scholarship on the topic of entrepreneurial activity is worthwhile and legitimate has both practical and theoretical importance. Since entrepreneurial activity is increasingly relevant to economic output and labor employment in both developed and developing nations, new knowledge about entrepreneurship can speed the outcomes desired by enterprising individuals, firms, and societies. For academics involved in developing this new knowledge, decisions on faculty promotion, tenure, and merit-pay increases depend in part on an assessment of the worth and relevance of research conducted (Pfeffer, 1993). Worth and relevance in turn depend on collegial and administrative appraisal of the legitimacy and value of the individual’s targeted field of study.

Theory on emerging organizations defines *boundary* and *exchange* properties that provide a clear distinction between existing and emergent organizations (Aldrich, 1999). Together, the concepts of boundaries and exchange help build others’ perception that entrepreneurship offers a unique understanding of organizational phenomena and is therefore a legitimate research endeavor. By legitimacy we mean the extent to which research in entrepreneurship advances useful knowledge and is substantively endorsed by powerful external collective actors.¹ The issues of emergence and legitimacy prompt us to ask the following research questions: How is entrepreneurship emerging? Are entrepreneurship scholars obtaining increased legitimacy? Where should research be directed to build the field? We explore this issue by analyzing entrepreneurship research published in major management journals from 1985 to 1999. We also investigate the exchange of scholarship between the general management domain and the entrepreneurship area as evidenced by article citation. We are fundamentally interested in the status of entrepreneurship scholarship in terms of volume of publication, which helps to establish a domain; tendency to bridge to other management domains, which may help to establish its uniqueness or may limit its acceptance as an independent field with appropriate boundaries; and the contribution entrepreneurship scholars can make to the broader Academy.

The article proceeds as follows. Based on earlier studies, we develop the concept of emergence as it relates to the field of entrepreneurship. Since we view entrepreneurship as a field of study within management, an analysis of entrepreneurship research appearing in major management journals is presented. Lastly, we propose directions for entrepreneurship research in its pursuit of distinctive boundaries and legitimacy. Given the emergent status of the discipline, we argue that the distinctive domain of entrepreneurship research is the nexus of business opportunities, individuals and teams, and modes of organizing within the overall context of market environments.

Studies About Entrepreneurship Research

Several studies in recent years have referenced or discussed entrepreneurship research in terms of its development and can provide background on the legitimacy issue central to this

article. In his survey of tenured entrepreneurship scholars at major universities, MacMillan (1991, 1993) found that publications indicative of the highest scholarly competence included the *Academy of Management Journal (AMJ)*, *Administrative Science Quarterly (ASQ)*, *Academy of Management Review (AMR)*, *Strategic Management Journal (SMJ)*, and *Journal of Business Venturing (JBV)*. Harrison and Leitch (1996) found that entrepreneurship research published in management journals from 1987 to 1993 represented a very small percentage of all published entrepreneurship research, and that the vast majority of such research is published in journals dedicated to entrepreneurship and small business. They warned that entrepreneurship scholars may become increasingly self-referential and inward-directed because of the field's reliance on dedicated entrepreneurship journals, at the expense of the intellectual development achieved through external legitimization of its tenets in publications of the various management fields.

In comparing management and entrepreneurship research published from 1990 to 1995, Aldrich and Baker (1997) concluded that progress toward coherence in paradigm development in entrepreneurship research has been limited. No powerful unifying paradigm exists, nor do multiple coherent points of view. Entrepreneurship studies tend to be less sophisticated in sampling frames, hypothesis development, statistical analysis, and dynamic longitudinal analysis than are organizational studies in the more established disciplines (Aldrich & Baker, 1997).

These studies highlight the important issues about legitimacy for the field of entrepreneurship. First, significant questions are raised about the scope and depth of the field. The apparent "chaotic pre-paradigmatic state of development" (Aldrich & Baker, 1997: 396) suggests that distinctive boundaries for the field must yet be established. The concept of boundaries suggests a defining breadth that, together with adequate depth of research, provides distinctiveness for the field. Second, poorly defined or poorly understood boundaries present significant challenges to the perceived legitimacy of work by entrepreneurship researchers. Entrepreneurship research submitted to major management journals must either seek to define such boundaries distinctively, or must rely on other theoretical frameworks already understood and accepted by the Academy. Proposing new theory for a new field with a wide range of intellectual roots and perspectives is a daunting task. However, if researchers rely on established theory from other fields, then the field of entrepreneurship research may continue to be viewed as lacking legitimacy. Thus exchange between the community of entrepreneurship researchers and the broader Academy is fundamentally related to the boundaries and the legitimacy of the field.

Given our analysis of 15 years of entrepreneurship research, we argue that conclusions about the field tend to be couched as a false dichotomy: either it is or is not a legitimate field with its own paradigm, or it has or has not "arrived." Alternatively, consideration of *boundary* and *exchange* characteristics suggests that entrepreneurship may exhibit emergent properties and movement toward increased legitimacy.

Boundaries and Exchange in Progress Toward Legitimacy

An academic field represents a community of scholars with a common research interest defined by an accepted set of assumptions. For example, Shane and Venkataraman characterize the field of entrepreneurship in terms of "scholarly examination" (2000: 218) of

relevant phenomena. The assumptions of scholars in a field include the philosophy, aim, central focus, methods of research and instruction, and relevant literature streams (Ogbor, 2000; Summer et al., 1990). “These assumptions are necessary to give focus and discipline for those in the field and to draw boundaries around the field so it can be distinguished from other fields of study” (Summer et al., 1990: 370). For the field of entrepreneurship, as with emerging organizations, *boundary* and *exchange* properties help maintain legitimate activity systems (Aldrich, 1999; Katz & Gartner, 1988). *Boundaries* establish the identity of a field of research as a distinct entity in the environment. Boundaries precipitate role changes for individuals and the field itself, since the combination of distinct intentions and organized resources implies unique activity sets. The creation of boundaries also creates the need for systems that maintain the boundaries and the distinctiveness of the entity. *Exchange* refers to communications between the entity and its environment and to communication among its members. Through exchange, emerging entities compete against and cooperate with external parties to procure essential resources for future growth; through internal exchange among its members, an entity further refines routines and knowledge about efficient and effective practice (Aldrich, 1999; Katz & Gartner, 1988). Value-adding exchange, which confers legitimacy on an entity, is most difficult and volatile during the emergent stage (Aldrich, 1999). The balance of this section applies boundary and exchange concepts to the field of entrepreneurship.

Achieving academic legitimacy has much to do with the creation of a distinct position in the context of existing structures (Harrison & Leitch, 1996). Entrepreneurship becomes a more distinct field of research when new theory is articulated, which is then recognized by scholars in other fields of research. Distinctiveness is better established when questions, concepts, and relationships are proposed that are different from those proposed by scholars in other disciplines and are unanswerable by them using their research lenses. Such theoretical contributions serve to identify and bracket new concepts and relationships (Bacharach, 1989), and thus create unique boundaries. An emerging field must establish its own ontological and epistemological base. Accomplishing this requires that scholars create and refine new understandings, developing a solid theoretical base as part of the overall scholarly effort.

Once the boundaries of entrepreneurship become clearer, the focus of scholarship should begin to shift. Theoretical discussions about what these boundaries are (and about the paradigm in general) give way to more empirical work. Empirical studies test and validate important questions about the theoretically-defined boundaries and relationships. Empirical studies also serve to develop a finer-grained view of various aspects of the phenomenon.

Together, theory development followed by empirical testing and validation serve to generate increasing consensus on the boundaries of the field and its relevance (Pfeffer, 1993). With growing consensus and the coherence that consensus generates (Pfeffer, 1993), we expect to see greater visibility of entrepreneurship research in key management journals. Furthermore, adhering to a pattern of theory development followed by empirical testing, we expect to see a decrease over time in the allocation of entrepreneurship articles focused on theory and a corresponding increase in empirical studies. These arguments lead to the following propositions:

Proposition 1: The number of entrepreneurship research articles published in major management journals will increase over time.

Proposition 2: While theoretical and empirical entrepreneurship research will emerge in tandem in the major management journals, theoretical articles will appear more frequently in the early stages of entrepreneurship research.

As the field of entrepreneurship emerges, exchanges should increase within the field as well as between its scholars and the broader academic community. At the true gestation of the field there are no scholars dedicated to entrepreneurship, so early authors must perforce originate from groups of scholars dedicated to research in other academic fields. These authors will bring to bear theoretical frameworks, concepts, and ideas from their base disciplines, in an attempt to explain entrepreneurship phenomena. However, such exchanges between entrepreneurship academics and the broader academic community would reveal that some phenomena cannot be explained or predicted using other disciplinary lenses. This recognition serves to create and strengthen the knowledge boundaries of an emerging entrepreneurship field. Subsequently, increasing exchanges among academics who choose to focus their efforts on entrepreneurship would serve to refine understandings within those boundaries.

Applying these ideas in a more tangible fashion, we would expect that common citation sources for entrepreneurship research in the early stages are likely to be non-entrepreneurship journals and other outlets such as conference proceedings and books. For example, [Romano and Ratnatunga \(1996\)](#) found that earlier entrepreneurship researchers largely depended on citations from core management journals to establish a theoretical base (67% of citations). As the field emerges, dedicated entrepreneurship publications have been introduced and are expected to become an increasingly important source of thought and formulation for scholars. Paralleling earlier arguments about scholars' interest in academic legitimacy, we would expect to observe increasing use of refereed journals dedicated to entrepreneurship as emergence continues. Thus,

Proposition 3: Entrepreneurship research published in the major management journals decreasingly relies on citations from major management journal sources over time.

Proposition 4: Entrepreneurship research published in the major management journals increasingly relies on citations from the leading entrepreneurship journals over time.

Proposition 5: Entrepreneurship research published in the major management journals decreasingly relies on citations from non-journal entrepreneurship sources over time.

Method

To examine these propositions, we identified and analyzed a set of entrepreneurship articles published in management journals. Using the *ABI-Inform* database, we searched for articles that met three criteria: (1) publication in one of seven major academic journals in the field of business management: *Academy of Management Journal*, *Academy of Management Review*, *Strategic Management Journal*, *Journal of Management (JOM)*, *Organization Science (OS)*, *Management Science (MS)*, and *Administrative Science Quarterly*;² (2) use of one or more key words related to entrepreneurship in the article title or abstract, i.e., entrepreneur (entrepreneurial, entrepreneurship), small business (emerging business), new

venture (emerging venture), and founder(s); and (3) publication between 1985 and 1999, inclusive. All editor notes, book reviews, review articles on the entrepreneurship domain, and replies to published articles were omitted so that the data would contain only articles and research notes that were non-invited and peer reviewed. Ninety-seven articles (listed in the Appendix A by journal, author and year) met the selection criteria. Articles were categorized as either empirical (data collection and statistical analysis) or theoretical (no data collection and analysis). In addition, the reference section of each article was used to count the number of citations from five types of sources: (1) seven major management journals, (2) three leading entrepreneurship journals (Journal of Business Venturing; Entrepreneurship, Theory and Practice (*ETP*); and Journal of Small Business Management (*JSBM*), (3) the proceedings from a prominent entrepreneurship conference, Frontiers of Entrepreneurship Research (*FER*), (4) other miscellaneous sources of entrepreneurship research (books and other entrepreneurship journals), and (5) all other non-entrepreneurship sources.

Results

Table 1 reports the number of entrepreneurship articles by management journal for the years 1985–1999 (per year and in total). Of the total 5291 articles published in the seven

Table 1
Entrepreneurship articles in major management journals 1985–1999^a

Journal year	Total ^a	AMJ ^a	AMR ^a	ASQ ^a	JOM ^a	MS ^a	OS ^a	SMJ ^a	Percent of Entrepreneurship division members ^{b,c}
1985	1/326	0/64	1/64	0/25	0/25	0/125		0/23	
1986	5/320	0/51	1/51	0/23	1/40	0/122		3/33	
1987	6/332	1/47	0/49	1/23	1/48	3/121		0/44	15.5
1988	4/316	0/48	3/42	0/24	0/38	0/107		1/57	11.0
1989	9/281	1/40	0/27	3/23	1/38	2/103		2/50	11.2
1990	5/314	0/39	0/32	2/23	0/42	1/105	0/22	2/51	10.4
1991	4/324	1/45	0/25	1/21	0/32	0/109	0/28	2/64	10.3
1992	9/376	0/65	1/28	2/25	5/46	0/109	0/22	1/81	10.2
1993	6/360	1/65	0/21	0/22	2/41	1/121	1/33	1/57	11.4
1994	11/373	2/71	1/25	0/22	0/38	1/118	4/36	3/63	12.4
1995	4/415	1/72	0/25	0/25	1/55	0/145	0/42	2/51	12.0
1996	11/388	3/64	1/23	0/29	2/36	1/126	3/42	1/68	12.0
1997	8/379	1/65	1/27	2/24	1/33	0/124	1/41	2/65	13.0
1998	5/388	0/43	0/39	0/26	0/32	0/144	3/45	2/59	13.4
1999	9/399	1/61	1/48	3/26	0/36	2/118	0/47	2/63	13.4
Total	97/5291	12/840	10/526	14/361	14/580	11/1797	12/358 ^d	24/829	
Percent (%)	1.8	1.4	1.9	3.9	2.4	.6	3.4	2.9	

^a Number of entrepreneurship articles/total number of research articles.

^b Entrepreneurship division membership/Academy of Management academic membership. Note: 1987 was the first year of divisional status for the Entrepreneurship division.

^c Academy members may join multiple divisions, with more than two divisions requiring extra dues.

^d Organization Science was founded in 1990.

management journals during the time frame of this study, 97 addressed entrepreneurship (1.8%). By journal for all years included in the study, the number varied from a low of 10 articles in the *AMR* to a high of 24 articles in the *SMJ*. *ASQ* had the highest percentage of entrepreneurship articles for the 15-year period at 3.9% of all published articles. Comparatively, the overall 1.8% publication rate of entrepreneurship-related articles did not keep pace with the membership percentage of the Entrepreneurship division within the Academy of Management (an average 12% per year of total Academy members since the division's inception in 1987).

Evidence of a growing body of entrepreneurship articles in management journals could lend support to the view that entrepreneurship is emerging as a distinct domain. Active scholarship in theory development could signal the conceptual definition of new domain boundaries. Comparing late to early study years, an average of 7.9 articles were published per year for 1992–1999 and only 4.9 per year for 1985–1991. The 62% growth in the publication rate is attributable to empirical work: the number of theoretical articles in the seven management journals is 0 or 1 per year, except for 1989 when there are 2 articles.

Statistically, a regression analysis demonstrates a positive trend for entrepreneurship publication in management journals over time (Table 2).³ Controlling for the total number of articles published, the results indicate a positive trend in the number of entrepreneurship articles published in major management journals over time (Model 1). This finding provides support for Proposition 1. Controlling for the total number of articles published, the results do not indicate a significant positive trend in the number of empirical entrepreneurship articles published in major management journals over time (Model 2) or the number of theoretical entrepreneurship articles published in major management journals over time (Model 3). Therefore, there is no support for Proposition 2.

Table 2
OLS regression analysis on number and type of entrepreneurship articles in leading management journals, 1985–1999

Dependent variable: year of publication	Model 1: count all entrepreneurship articles	Model 2: count entrepreneurship empirical articles only	Model 3: count entrepreneurship theoretical articles only
Independent variable			
Full model count of entrepreneurship articles	.43 (.09)*	.39 (.17)	.98 (.27)
Control variable			
Count of all articles	.08 (.00)***	.08 (.00)***	.09 (.00)***
F full model	(17.3)***	15.6***	(14.3)***
Model R^2 control only	.67	.67	.67
Full model R^2	.74	.72	.70
Change in R^2 with independent variable	.07	.05	.03

Beta (significance level).

* $p < .01$.

*** $p < .01$.

Table 3
Descriptive statistics on citation analysis^a for entrepreneurship articles published in management journals, 1985–1999

Journal cited	Number of cites 1985–1999	Average number of times journal cited per article	Percent of total cites ^b	Journal rank by percent of total cites
Major management journals				
Administrative Science Quarterly	236	2.4	7.1	1
Strategic Management Journal	212	2.2	6.4	2
Academy of Management Journal	198	2.0	6.0	3
Academy of Management Review	192	2.0	5.8	4
Management Science	79	.8	2.4	6
Journal of Management	50	.5	1.5	8
Organization Science	26 ^c	^c	.8	^c
Other non-entrepreneurship references	1524		45.8	
Sub-total of non-entrepreneurship citation sources $N = 2517$ (75.6%)				
Dedicated entrepreneurship journals				
Journal of Business Venturing	161	1.7	4.8	5
Entrepreneurship, Theory and Practice	67	.7	2.0	7
Journal of Small Business Management	48	.5	1.4	9
Other entrepreneurship				
Frontiers of Entrepreneurship Research	55	.6	1.7	
Other	481		14.4	
Sub-total of entrepreneurship citations $N = 812$ (24.4%)				
Total	3329		100.1	

^a Self-citations excluded from analysis.

^b Does not add to 100% due to rounding.

^c Organization Science was not included in the comparison categories as the journal was not founded until 1990.

Another window into understanding the development of entrepreneurship research is to consider the intellectual exchange among entrepreneurship scholars and between entrepreneurship scholars and other scholars (Propositions 3–5). The technique of citation analysis is used to examine these types of exchange. Following Phene and Guisinger (1998), we exclude self-citations (i.e., when an article cites another article from the same journal) from the analysis. Table 3 gives descriptive statistics on the combined reference sections of the study articles. Altogether the 97 articles employ 3329 references, of which 993 (30%) were published in the seven leading management journals included in this study. Of the remaining citations, 812 (24%) referred to dedicated entrepreneurship sources (books and journals), including 276 (8%) to the three leading journals dedicated to entrepreneurship (*JBV*, *ETP*, and *JSBM*). The remaining 1524 citations (46%) referred to other outlets.

These data indicate that entrepreneurship researchers publishing in management journals use a wide variety of reference sources. However, five journals appear to be particularly influential. As shown in Table 3, these five journals are *ASQ*, *SMJ*, *AMJ*, *AMR*, and *JBV*, with total citations in the 161–236 range.

Table 4
 OLS regression analysis on reference source trends, 1985–1999

Dependent variable: year of publication	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
1. Major management journals	.20 (.00)***					
2. Non-journal entrepreneurship sources		-.15 (.03)**				
3. Three leading, dedicated entrepreneurship journals			.21 (.02)**			
4. Journal of Business Venturing				.48 (.00)***		
5. Entrepreneurship Theory and Practice					.09 (.72)	
6. Journal of Small Business Management						-.30 (.26)
Control variable						
Count of all references	-.02 (.22)	.04 (.06)*	-.00 (.87)	-.00 (.82)		
F full model	8.8 (.00)***	3.0 (.05)**	3.1 (.05)**	7.8 (.00)***	.50 (.60)	1.1 (.34)
Model R^2 control only	.01	.01	.01	.01		
Full model R^2	.16	.06	.06	.14		
Change in R^2 with independent variable	.15	.05	.05	.13		

Beta (significance level).

* $p < .10$.

** $p < .05$.

*** $p < .01$.

To move beyond a static analysis, we test the data for trends in reference source use over time. In a series of regression analyses (Table 4) we examine the relationship between year of publication and various reference sources, controlling for total number of citations. Following the logic of entrepreneurship emergence, we test for a decrease in the use of the major management journals (Model 1), a decrease in non-journal entrepreneurship sources (Model 2), and an increase in citation of the leading entrepreneurship journals (Models 3–6).

The results do not support Proposition 3, since entrepreneurship research published in the major management journals increasingly (rather than decreasingly) relies on citations from major management journal sources over time. However, citation of non-journal entrepreneurship sources declined over time, providing support for Proposition 5. Finally, our data indicate that entrepreneurship research published in the major management journals increasingly relies on the leading entrepreneurship journals over time. This finding provides support for Proposition 4. Figure 1 displays a 3-year moving average comparison for references to the three leading entrepreneurship journals (*JBV*, *ETP*, and *JSBM*).

To more directly examine the change in citation of each journal that occurred over these 15 years, we compared post hoc the number of citations during 1985–1987 to the number of citations during 1997–1999. Controlling for the number of articles published per year by each journal, we found a decrease in the citation of articles from *JSBM* and *MS*; a modest increase for *AMJ*, *OS*, and *AMR*, and a relatively large increase for *ASQ*, *JBV*, and *SMJ*. Table 4 includes the cumulative and individual results of this analysis for the three leading

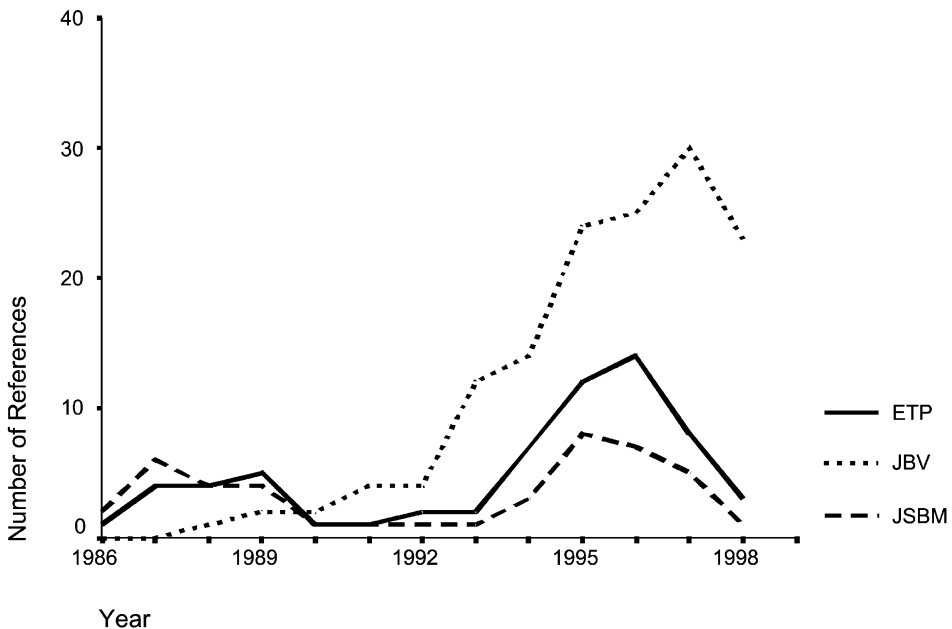


Figure 1. Three-year moving average of number of reference sources. ETP: Entrepreneurship Theory and Practice; JBV: Journal of Business Venturing; JSBM: Journal of Small Business Management.

entrepreneurship journals. The rise in reference rate for *JBV* over the last 8 years of the study is particularly striking.

Discussion of Findings

This article set out to examine trends in entrepreneurship research published in the major management journals that provide evidence of the emergence of entrepreneurship as an academic field. In doing so, we wanted to evaluate whether progress has been made in establishing boundaries for the field and generating exchange among scholars inside and outside the field.

Over the 1985–1999 time frame, we found 97 articles in the major management journals, representing less than 2% of all articles published. Although the percentage of entrepreneurship-related articles appears to be increasing, this is less than we anticipated. Publication of empirical work is increasing, while theoretical work remains at a consistently low level. Over time, the dedicated entrepreneurship journals are cited more frequently and non-journal entrepreneurship sources (such as proceedings and books) are cited less in entrepreneurship research published in major management journals. In 1985–1999, *JBV* emerged as the strongest journal dedicated exclusively to the entrepreneurship domain. *JBV* was fifth overall among journals cited in entrepreneurship research published in the major management journals.

In the present study we find that the boundaries of the entrepreneurship field continue to be highly permeable. This is evidenced by theory development that is not well represented in mainstream management journals and by a continued high degree of reliance on major management journals for entrepreneurship research citation support. Permeability allows scholars from various fields of research to apply their models and concepts to entrepreneurial settings, and thus opens entrepreneurship to criticisms such as accumulated fragmentalism (Harrison & Leitch, 1996). On the other hand, exchange has developed more or less as anticipated. Initially, exchange was dominated by non-entrepreneurship citation sources. Increasingly, however, exchange in entrepreneurship research published in mainstream management journals relies upon dedicated entrepreneurship journal citations. This provides evidence of a growing internal culture and knowledge base, and thus a growing level of exchange internal to the entrepreneurship community. The rise to prominence of *JBV*, in particular, suggests the development of a vibrant community within entrepreneurship and thus presents positive opportunities for entrepreneurship academics. As an important citational foundation for entrepreneurship research appearing in major management journals, work published in *JBV* increasingly bears on the conversations about entrepreneurship that occur within the broader management context. This exchange thus influences the establishment of boundaries for the field of entrepreneurship.

This study found evidence that entrepreneurship is emerging. The concept of emergence suggests that questions of boundaries and legitimacy are not “either/or” propositions. The field of entrepreneurship may not yet have “arrived,” but arrival in and of itself does not uniquely define the field or the legitimacy of the efforts expended by its scholars. A growing exchange internal to the entrepreneurship community of scholars, together with exchange across domains attempting to better clarify the boundaries of entrepreneurship (e.g., Shane

& Venkataraman, 2000), offers promise of continuing emergence and increasing legitimacy for the field. This is an important finding for faculty whose employment evaluations may be based in part on the extent to which their work is cited in “acceptable” publications.

While offering promise for scholars interested in entrepreneurship, the results of this study also suggest concern. Organizations must establish proprietary boundaries in order to succeed (Aldrich, 1999; Katz & Gartner, 1988). No research “space” in entrepreneurship has yet been defined in which the application of other disciplines is unproductive or unrevealing. Lacking such defining knowledge or “knowing” boundaries, the field remains permeable to other disciplines. Until intellectual boundaries are established, the field may never gain the consensus and legitimacy academics seek and may only be viewed as a venue in which other disciplinary perspectives may be tested.

Boundaries and Intersections of Entrepreneurship Research

In the results presented here, it is particularly disconcerting that so few theoretical articles seek to develop unique knowledge and coherence for the field. Good theory is the foundation of any emerging field; it sets the boundaries and thus fosters both external and internal exchange. A field of study with distinctive boundaries and coherent theory faces few questions of legitimacy from the broader Academy. For the field of entrepreneurship to then reach a higher level of legitimacy, we argue that the boundaries need to be articulated more clearly and new theory more consistently put forward.

Recent research has begun to address this need (Amit, Glosten & Muller, 1993; Shane & Venkataraman, 2000; Venkataraman, 1997). Figure 2 captures a sense of the unifying framework suggested: the constructs of opportunities, individuals and teams, and mode of organizing within the context of wider environments can be used to organize an approach to entrepreneurship. *Opportunities* often evolve from interactions between markets and environments that involve the creation of new means-ends relationships. The *individuals and teams* category focuses on the characteristics of individuals and teams, the dynamic processes associated with the development of intellectual or human capital by individuals and/or teams, and the comparison of different types of entrepreneurs or of entrepreneurs to non-entrepreneurs. The *mode of organizing* category includes management practices, the acquisition and deployment of resources, and the development of systems, strategies, and structures that allow a discovered opportunity to be transformed into a viable product or service. The *environments* category is concerned with rates of startup at a population level and the cultural, economic or market factors converging to create an environment that enhances or inhibits entrepreneurship.

We classified the entrepreneurship articles of this study into these categories. Sixty-six of the articles dealt with unitary concepts in this domain map, while only 28 focused on intersections between concepts. Furthermore, 86 of the 97 articles focused on more easily observable, accessible and often objectively measurable entities (individuals, organizations, environment), while only eight studies focused on content that includes the more subjective concept of opportunity. Finally, of the 28 articles that did focus on intersections, 21 appear in just one nexus of the domain map. Most research, therefore, has not focused on the nexus of important concepts in the domain.

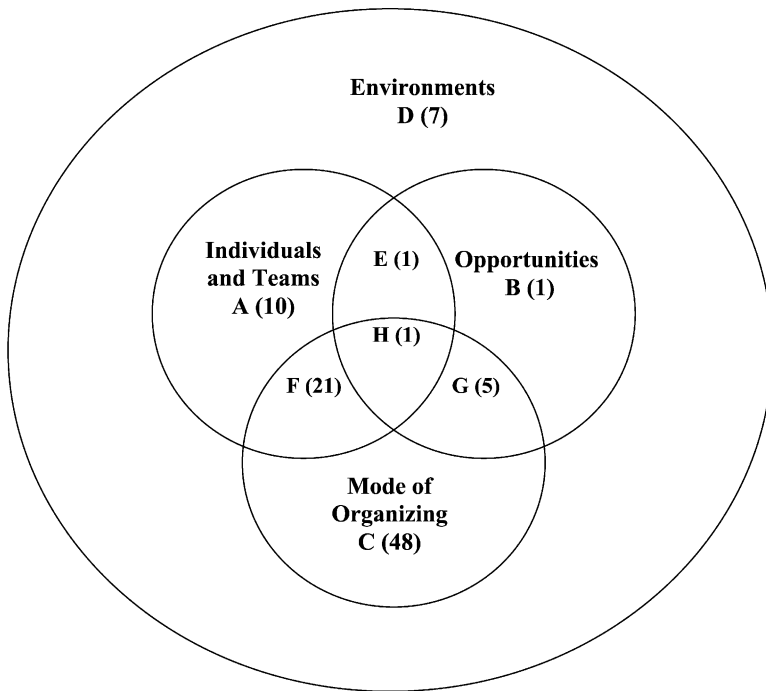


Figure 2. Conceptual domain of entrepreneurship as a field ($n = 97$ articles). Other articles, not included in specified categories (3). () indicates number of study articles classified to this domain or intersection area.

Intersections and Linkages Among Concepts

With the exception of the opportunities category, all of the other areas in and of themselves have received extensive research attention from other areas of management as well as non-management disciplines. This might suggest that opportunities could become the unique domain of entrepreneurship. No academic discipline has heretofore developed the area of opportunities, and research is certainly needed here to lay a better foundation for future entrepreneurship inquiry. However, limiting entrepreneurship research to the specific domain of opportunity may be shortsighted. Individual differences, opportunities, or modes of organizing by themselves are relatively unlikely to result in important findings for entrepreneurship. It is when we probe the various intersections, exploring how individual differences impact the recognition of business opportunities or how they facilitate the marshalling of necessary resources to exploit these original insights, that we seem to uncover the true drama of the entrepreneurship phenomena. Thus we argue that the domain of the entrepreneurship field is fundamentally at the nexus of opportunities, enterprising individuals or teams, and mode of organizing within the overall context of wider environments. Research that seeks to define boundaries for the field and build theory, therefore, should address interesting and important research questions that better explain the complexity and dynamic nature of the phenomena at the intersections.

In reviewing these results we pointedly ask how entrepreneurship theory, and thus the field, can advance if so little work encompasses these intersections. We believe that the intersecting areas of the domain map in [Figure 2](#) are critical to the future of entrepreneurship research for three reasons. First, as evidenced by previous work that led to the creation of this domain map, entrepreneurship is a multi-faceted phenomenon. Like the Kipling parable about the blind men and the elephant, simply touching one leg or the tail will not provide a synthetic view of the creature. [Shane \(2000\)](#) and [Shane and Venkataraman \(2000\)](#), for example, claim that opportunities exist independently, irrespective of individuals or firms. This may be true, but such opportunities do not come to fruition without unique insights, perspectives, and interpretations by the founders, and are not transformed into wealth generation without organizing actions. This suggests that the *intersection* between opportunities and enterprising individuals or mode of organizing, or both, is central to entrepreneurship theory. While the study of opportunities by itself (without the intersections) may be informative, it is unlikely to be able to facilitate and synthesize a stream of entrepreneurship research that generates consensus and legitimacy.

Second, research that focuses on a unitary dimension may be unable to contribute to an understanding of entrepreneurship phenomena. For example, 10 of the articles in this study focused primarily on individuals and teams, characterizing, describing, and predicting aspects of entrepreneurial efforts. However, such research may not be able to uniquely distinguish between the fields of entrepreneurship and strategic management, where top management teams are an important area of research (e.g., [Hambrick, 1989](#)). Population ecology has been used to explain rates of growth in populations of firms at the macro-environmental level. While providing great insight on questions of interest to entrepreneurship scholars, population ecology as a theoretical paradigm is not unique to entrepreneurship; it can also explain processes affecting mature firms, people, populations of tortoises, etc. Thus we hold that entrepreneurship theory must seek to identify not only the boundaries of “what is entrepreneurship” but also “what is *not* entrepreneurship.”

Third, theories and perspectives from other management disciplines tend to focus on a single concept (e.g., domains A, B, and C in [Figure 2](#)), with researchers often using empirical data drawn from the entrepreneurs and their firms. Perhaps it is research at this unitary level that gives entrepreneurship its reputation for “accumulative fragmentalism” ([Harrison & Leitch, 1996: 69](#)). Often the focus on a unitary concept applies levels of analysis and a variables orientation consistent with the paradigms of other management disciplines (e.g., individual, team, firm, or population). The incommensurability between levels and variables results in claims that “researchers tend to speak after one another rather than to one another” ([Bruyat & Julien, 2001:166](#)).

We argue “entrepreneurship” research should be about interesting and important research questions that exist at the intersections of [Figure 2](#), where the complexity of the phenomena exists. Here, there is a great deal of room for the development of new theory. We also believe that available theory from other fields and disciplines can be used to probe specific research questions in the nexus. When established theory is used, it will likely be extended, enriched, or challenged because it is being used to address new and important research questions.

We now suggest four theoretical perspectives from which substantial contributions can be made to the field of entrepreneurship, focusing on the intersections E, F, G, and H pictured in [Figure 2](#). These perspectives include decision and prospect theories, start-up

factors of production, information processing/network theory, and temporal dynamics. This discussion is meant to illustrate how the areas of intersection in Figure 2 can be productively explored.

Decision-Making Theories

The notion that entrepreneurs are somehow different from the rest of the population provided the impetus for substantial research in the 1960s and 1970s, but the findings were largely disappointing (see Low & MacMillan, 1988 for a review). However, cognitive and prospect theory approaches to the study of opportunity identification, evaluation, and response may help us understand how entrepreneurs think and explain their unusual tendency to take bold action.

First we consider how entrepreneurs discover new opportunities while others do not (Intersection E⁴) (Kirzner, 1979; Knight, 1921). A cognitive perspective may provide important insights into understanding how entrepreneurs use specific information to make leaps in the development of an enterprise. By combining new information with entrepreneurial logic (Baron, 1998; Busenitz & Barney, 1997), entrepreneurs can develop hunches about how a new variable such as a technological breakthrough or an environmental change will impact a specific project long before it can be methodically and rationally explained. A more rational or normative approach requires an investment in information that tends to be very costly, time-intensive, and therefore inhibiting of the entrepreneurial process.

Second, we think that the cognitive perspective can help us better understand why entrepreneurs develop the organizations that they do with varying levels of success (Intersection H). We suspect that the heuristic-based decision style of entrepreneurs leads them to think in less structured and less systematic ways, and thus they are likely to establish organizations reflecting these characteristics. With a more structured organization, entrepreneurs are likely to feel constrained and unable to navigate through the opportunities and obstacles that start-up firms typically face. While there are no doubt weaknesses associated with less structure, we suspect that flexibility provides many advantages during the early stages of organizational growth. Furthermore, what is good or perhaps even necessary for one stage of an organization may later be a detriment. We propose that future research investigate the interrelationship between entrepreneurial cognition and organizing modes. For example, can entrepreneurs with their entrepreneurial cognition become more formal and structured as a business grows or do they need to move aside and let more traditional managers direct the growing business (Intersection F)?

Another important question left unanswered is why, faced with an identified opportunity, entrepreneurs will act and non-entrepreneurs will not. We think prospect theory (Kahneman & Tversky, 1979) has significant potential to better enlighten us on how entrepreneurs evaluate risk and why entrepreneurs take extraordinary risk (Intersection E). Prospect theory predicts that risk is based more on the decision-maker's reference point than on probable outcomes (Kahneman & Tversky, 1979). Rather than focusing on current industry standards, we suspect that entrepreneurs tend to focus more on future goals as their reference point, given their future orientation (Bird, 1988). Human capital characteristics such as alternative employment opportunities and psychic income from entrepreneurship (Gimeno, Folta, Cooper & Woo, 1997) may also frequently serve as reference points.

To date, much of the decision-making research within the entrepreneurship domain has relied on post hoc methodologies, such as questionnaires, surveys and interviews, to query entrepreneurs on how they made various decisions. While insightful and undoubtedly advancing the field, such an approach introduces a number of possible errors and biases (cf. Huber & Power, 1985; Shepherd & Zacharakis, 1997). We argue that triangulating post hoc methods with real time techniques, including protocol analysis (e.g., Sarasvathy, 2001), conjoint analysis (Shepherd, 1999), and policy capturing (Zacharakis & Meyer, 1998), can advance the field of entrepreneurship. These methods can be revealing of entrepreneurs' underlying cognitive structures.

While an emphasis on cognition and decision-making points to the individual as the level of analysis, other levels may also be relevant. For example, the team (such as the founding team or the R&D team) represents an important level of analysis; investigating "social cognition" in teams of entrepreneurs may be an important contribution. This is especially the case when the social cognition of entrepreneurial teams is investigated at the nexus of another category. For example, the intersection of team leadership and team diversity or environmental factors may offer insights about social cognition and propensity to discover business opportunities.

Start-up Factors of Production

In addition to the creation of new technologies, entrepreneurship generally involves the combining of resources to initiate new business activities (Schumpeter, 1934). The early assimilation of the necessary resources and start-up factors of production, sometimes referred to as strategic factor markets (Barney, 1986), invites further inquiry. Given that an entrepreneurial idea by definition has yet to be recognized and accurately valued by the market, can various factors of production be purchased more reasonably? In the context of specific strengths that entrepreneurs typically have, to what extent are they able to recognize in a realistic manner the combination of resources that constitute an opportunity? How do entrepreneurs with superior skills in one or two areas obtain the necessary inputs for a balanced push and organization (Intersection F)? Given that obtaining additional resources is frequently necessary to launch a business, strategic factor market theory holds interesting potential for probing this intersection.

It is important to point out that a strategic factor alone frequently does not create value (entrepreneurial rents) but value can be created by bundling strategic factors in such a way that the bundle becomes rare, valuable, not substitutable, and inimitable (Barney, 1991). Why are some individuals able to create new business activities by accumulating and then bundling resources while others cannot or do not? (Intersection E). Dierickx and Cool (1989) argue that firms may acquire imperfect substitutes for the desired input factor(s) and adapt them to the specific use it intends. Are at least some entrepreneurs better at bootstrapping together the necessary resources and bundling them together in a manner that creates future goods or services (Intersection G)? It appears that uncertainty surrounding a particular (re)combination of resources is the reason why an opportunity (B) can exist in its current form, i.e., without automatically being exploited by others in the environment (D). Consistent with earlier statements, we suspect that entrepreneurial cognition is positively related to an individual's ability to correctly pierce

the fog of uncertainty. We think that probing these questions holds great potential for a better understanding of the entrepreneurial process and how entrepreneurs exploit their new ideas.

Information Processing and Network Theory

We know that in markets characterized by disequilibrium and dynamic change, entrepreneurs become alert and develop knowledge by making deliberate informational investments that others do not (Fiet, 1996; Hayek, 1945). Therefore, attention paid to the nature of information, and the process by which information is gathered and evaluated may be particularly appropriate for understanding the antecedents and consequences of entrepreneurial action. This line of inquiry acknowledges the knowledge and information flows among members of an entrepreneurial network. Relief is provided from the dominant perspective that entrepreneurial entities (e.g., individuals, firms, populations) are discreet, stand-alone parties.

At the nexus of individuals and opportunities (Intersection E), many questions exist that may profitably be explored using an information processing perspective. For example: what sources of information have entrepreneurs tapped in to, and with whom do they share, refine, and assemble bits of information to create a new coherent view of opportunity? Can individuals truly discover opportunity within their existing network of friends and associates, or does the identification of opportunity rely upon the acquisition of information that is outside that network? How sharply defined is the knowledge about new opportunities at the outset, and how does continued information gathering further shape opportunity as new venture organizing efforts proceed (West & Meyer, 1997)? Can information feedback loops associated with learning (e.g., Argyris & Schön, 1978) help describe the process of opportunity identification?

When an entrepreneur seeks to formalize an opportunity into a new firm (Intersection H), information processing is also critical. For example, it may be asked: how do founding entrepreneurs identify and communicate with venture capitalists, banks, and angel investors in order to secure financial capital? How are their ideas and vision presented to others in order to attract human capital and other enabling strategic factors? The process often involves networking (Dubini & Aldrich, 1991) in order to locate the most receptive or knowledgeable individuals. What kinds of information are appropriate to share with each audience, and what kind of information that is at the intellectual core of the new venture should be protected and not revealed? Such questions imply that entrepreneurs act as information brokers (Hilmy, 1992) in order to accomplish the goal of founding and organizing a company. These ideas suggest that a better understanding of information content and flows among an entrepreneur's varied networks may reveal many facets of a new firm's startup and performance.

An information and knowledge flows orientation would recommend the use of network analysis methods (e.g., Scott, 1991) in future research. Information flows in an entrepreneurial network depend on structural characteristics such as the size and types of connections in the network, density and centralization (e.g., the importance of central individuals and gatekeepers for the continued flow of information), the importance of connections between different social groups in the diffusion of new information and innovations

(Granovetter, 1973), and the extent to which individuals bridge “structural holes” between different network clusters (Burt, 1997).

Viewing entrepreneurship in terms of networks and information flow can provide a synthetic view of different theoretical perspectives, and of the multi-level nature of the entrepreneurship phenomenon. For example, this approach would argue that information networks are an intervening construct between individuals and firms. Individuals’ characteristics and heuristics affect their network behavior, which in turn impacts firm organization and performance. Moving between firm and population levels, the establishment and growth of vital networks in entrepreneurial communities provides support for and spurs new venture formation. A new venture itself may be viewed as a particular aggregation of knowledge, in the form of an experienced and knowledgeable top management team recruited (or “flowing”) from the industry or community. In each of these transitions (individual–firm, firm–population, population–firm) the same network analysis variables described above may be usefully employed to better understand relationships. Thus an information processing perspective, together with network analysis methods and techniques, presents an opportunity for entrepreneurship research at the meta-level of analysis.

The Temporal Dynamics of Entrepreneurship

All the intersecting domains of Figure 2 are embedded in temporal dynamics. While most business activities involve time, Bird and West (1997) argue that temporal issues uniquely and explicitly characterize the entrepreneurial process. New opportunities rarely if ever emerge in a rational and predictable fashion but rather in the context of much uncertainty and long-term horizons.

Since time is an important dimension of the discovery, creation, and exploitation process (Baron, 1998), it becomes imperative for researchers to better understand related phenomena. For example, assuming that one’s temporal orientation and the ability to span multiple time-horizons vary by individuals (Jaques & Cason, 1994), are entrepreneurs more likely to have the ability to span multiple horizons than their average counterparts? If so, then we suspect that it would be very informative to understand the extent to which such perspectives are based on history, future orientation, or some combination of the two.

Entrepreneurship also raises important research questions such as time constraints and brief windows of opportunity. Both the information processing and decision theory perspectives highlight the paths that entrepreneurs follow in identifying and evaluating opportunities. These can be built upon with a temporal orientation. For example, when does or should an entrepreneur act? Why are some individuals (entrepreneurs) able to act more quickly than others (Intersection E)? Furthermore, is speed in strategic decision making associated with different time-horizons and how do these dimensions affect entrepreneurial discovery, creation and exploitation?

Once a potential opportunity is discovered, the entrepreneur must typically decide whether to gather more information to make a more accurate decision on the “attractiveness” of the opportunity or simply deal with the uncertain opportunity before the window of opportunity closes (Shepherd & Levesque, 2002). Under such time constraints, making fast decisions and using heuristics (Intersection E) or organizational processes (Intersection G) to speed

the decision process may be highly beneficial and help us better understand why some entrepreneurs act more quickly (Busenitz & Barney, 1997; Eisenhardt, 1989).

The intersection between individuals and mode of organizing may also provide important insights into entrepreneurs' ability to act promptly. On an ongoing basis the mode of organizing likely affects the temporal portfolio of options pursued, the pacing of activity, the synchronization of firm development with temporal windows of opportunity, and the rate of growth (Intersection H). These issues suggest that time represents an opportunity for entrepreneurship scholars as well as numerous methodological challenges. One challenge is to design studies that capture the entrepreneurial process over time. Options exist with experimental designs that manipulate time to simulate the entrepreneurial environment and with event history analysis that can track changes with censored data in entrepreneurial actions as the external environment evolves.

Commentary

Given the growing popularity of entrepreneurship on a variety of fronts (e.g., degree programs at the undergraduate and graduate levels, membership in the Entrepreneurship division of the Academy of Management, the number of endowed chairs and professorships), we expected to see a meaningful upward trend in the number of entrepreneurship articles appearing in major management journals. We did not find strong evidence for this supposition. While there are signs of entrepreneurship's recognition within management (e.g., the recent special journal issues on international entrepreneurship (*AMJ*) and privatization and entrepreneurial transformation (*AMR*)), entrepreneurship's empirical and theoretical development within the management domain remains in the early stages. We conclude that entrepreneurship must develop its capability to probe interesting and important issues from a solid foundation of entrepreneurship theory to claim a respected and more well-developed voice in management's conversation.

Much more theoretical work is needed to map a course of study and adequately develop boundaries unique to the entrepreneurship domain. With only a handful of theoretical articles on entrepreneurship published in major management journals in the past 15 years, our potential for a vibrant conceptual discussion is severely restricted. We face two obstacles to building this theoretical foundation. First, dialogue has just begun regarding the questions appropriate to define entrepreneurship (Shane & Venkataraman, 2000; Venkataraman, 1997). Second, it is obvious to those working within entrepreneurship—but perhaps not obvious to those outside the field—that entrepreneurship commonly manifests as a multi-level phenomenon (Davidsson & Wiklund, *in press*; West, 1997). Given that authors and reviewers may not be trained in multi-level theory or research, moving comfortably between and among the individual, group, firm, and population level of analysis becomes a challenging undertaking. These factors, alone and in combination, make it more difficult for scholars to embark on entrepreneurship research that will win publication space in leading general management journals.

In answer to these realities, we suggest that entrepreneurship scholars focus efforts on the nexus of entrepreneurial opportunities, enterprising individuals or teams, and mode of organizing within the overall context of dynamic environments. We have provided many

examples of research questions that hold promise for addressing important questions within the domain of entrepreneurship. The good news is that an abundance of opportunities exist for scholars as the field of entrepreneurship moves through its emergent stage.

Notes

1. Pfeffer similarly describes paradigm development. Paradigms are recognized when there is wide agreement that attention to certain research questions, methods, and programs of study will “advance training and knowledge” (1993: 600). Developed paradigms result in outcomes that include greater resource provision, lower journal rejection rates, less time to publication, increased governance in academic departments, and greater presence in broader academic organizations, among others. Thus cognitive legitimacy and socio-political legitimacy for an emerging field are closely related (Aldrich & Fiol, 1994).
2. This list was based on a number of studies that rated and ranked journal quality using either expert opinion (Barman, Tersine & Buckley, 1991; Coe & Weinstock, 1984; Franke, Edlund & Oster, 1990; Gomez-Mejia & Balkin, 1992) or citation counts (Johnson & Podsakoff, 1994; Salancik, 1986).
3. While this study examined all entrepreneurship-related articles, this set of articles represents a subpopulation of all articles published within a specified time frame and journal set. Consequently, we see it as appropriate to statistically examine the significance of these changes over time.
4. Intersection henceforth refers to Figure 2.
5. The letters in brackets [] correspond to the various categories in Figure 2.

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Appendix A. List of Articles Examined⁵

Journal of Management: Mainiero (1986) – [F]; Begley and Boyd (1998) – [A]; Biles, Bolton and Di Re (1989) – [E]; Cotcher (1992) – [I]; Lengnick – Hall (1992) – [C]; Russel and Russel (1992) – [C]; Dollinger and Golden (1992) – [D]; Jones and Butler (1992) – [C]; Morris, Avila and Allen (1993) – [H]; Mosakowski (1993) – [C]; Hill and Levenhagen (1995) – [F]; Shane (1996) – [D]; Castrogiovanni (1996) – [C]. Shane (1997) – [I].

Organization Science: Rosenbla, Zehava, Nord and Walter (1993) – [C]; Day (1994) – [F]; Farjoun (1994) – [C]; Baum and Singh (1994) – [F]; Budros (1994) – [F]; Eisenhardt, DesMarteau and Shoonhoven (1996) – [C]; Galunic, Eisenhardt and DesMarteau (1996) – [C]; Richardson (1996) – [C]; Luo (1997) – [C]; Arino and de la Torre

(1998) – [C]; Sedaitis (1998) – [F]; Jones, Hesterly, Fladmoe –Lindquist, Borgatti and Stephen (1998) – [C].

Management Science: Roberts and Hauptman (1987) – [C]; Segev (1987) – [C]; Horwitch and Thietart (1987) – [C]; Kazanjian and Drazin (1989) – [I]; Jewitt (1989) – [A]; Amit, Glosten and Muller (1990) – [A]; Thompson and Horowitz (1993) – [C]; Dowling and McGee (1994) – [C]; Bitran and Mondschein (1996) – [C]; Shane and Foo (1999) – [D]; Shepherd (1999) – [C].

Administrative Science Quarterly: Carrol and Mosakowski (1987) – [A]; Louis, Blumenthal, Gluck and Stoto (1989) – [G]; Boeker (1989) – [F]; Romanelli (1989) – [C]; Schoonhoven, Eisenhardt and Lyman (1990) – [G]; Krackhardt (1990) – [A]; Chen and Meindl (1991) – [F]; Larson (1992) – [C]; Nee (1992) – [D]; Gimeno, Folta, Cooper and Woo (1997) – [F]; Baum and Haveman (1997) – [C]; Ocasio (1999) – [F]; Ashcraft (1999) – [F]; Abrahamson and Fairchild (1999) – [F].

Academy of Management Journal: Miller (1987) – [C]; Boeker (1989) – [F]; Kalleberg and Leicht (1991) – [A]; Drazin and Kazanjian (1993) – [A]; Pennings, Barkema and Douma (1994) – [C]; Browning, Beyer and Shetler (1995) – [C]; Frese, Kring and Soose (1996) – [A]; Sapienza and Korsgaard (1996) – [C]; Zahra (1996) – [C]; Dickson and Weaver (1997) – [F]; Gersick (1994) – [F]; Welbourne and Cyr (1999) – [C].

Academy of Management Review: Gartner (1985) – [F]; Bowen and Hisrish (1986) – [A]; D'Amboise and Muldowney (1988) – [C]; Bird (1988) – [A]; Katz and Gartner (1988) – [F]; Jacobson (1992) – [G]; Aldrich and Fiol (1994) – [D]; Lumpkin and Dess (1996) – [F]; Cable and Shane (1997) – [C]; McGrath (1999) – [G].

Strategic Management Journal: Birley (1986) – [D]; Cooper and Dunkelberg (1986) – [F]; Bracker and Pearson (1986) – [C]; Bracker, Keats and Pearson (1988) – [C]; Lafuente and Salas (1989) – [F]; Covin and Slevin (1989) – [C]; Feeser and Williard (1990) – [C]; Shan (1990) – [C]; Fiegenbaum and Karnani (1991) – [C]; Mosakowski (1991) – [C]; Garud and Van De Ven (1992) – [C]; Naman and Slevin (1993) – [C]; McDougall, Covin, Robinson and Herron (1994) – [C]; Dodge, Fullerton and Robbins (1994) – [C]; Stopford and Baden –Fuller (1994) – [C]; McGee, Dowling and Megginson (1995) – [C]; Merz and Sauber (1995) – [C]; Stone and Brush (1996) – [C]; Birkinshaw (1997) – [G]; Dess, Lumpkin and Covin (1997) – [C]; Robinson and McDougall (1998) – [C]; Dean, Brown and Bamford (1998) – [D]; Arend (1999) – [B]; Barringer and Bluedorn (1999) – [C].

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