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CLASSIFICATION AS A FACTOR IN THE SCIENTIFIC EVOLUTION OF ENTREPRENEURSHIP

Minet Schindehutte
Miami University
schindm@muohio.edu

Michael H. Morris
Miami University
morrism3@muohio.edu

Donald F. Kuratko
Ball State University
dkuratko@gw.bsu.edu

ABSTRACT

Taxonomy, or the establishment of meaningful classification schemes, is examined as a major stage in the development of disciplines. The role of classification in the advancement of entrepreneurship is established. Approaches to developing classification schemes, and criteria for assessing them, are discussed. Key classification schemes in five different areas within entrepreneurship are evaluated. Shortcomings are noted, and priorities are established for taxonomic development. A framework is proposed for developing an integrative classification for the discipline of entrepreneurship.

INTRODUCTION

Knowledge about entrepreneurship is growing. Arguably, entrepreneurship is the fastest growth area not only in business schools, but in academe, today (Katz, 1999; Timmons, 1999; Vesper & Gartner, 1999). Over 500 colleges and universities offer courses in entrepreneurship, and at least 100 offer minors, concentrations or majors in the area. Programs exist at the undergraduate, MBA and Ph.D. levels, and better than half of those having programs focus on both the graduate and undergraduate education. The number of endowed professorships in entrepreneurship now exceeds 170. At least 40 academic journals have an editorial focus that is entrepreneurship-related, and a number of others regularly feature articles on entrepreneurship topics. Globally, more than twenty major academic research conferences devoted exclusively to entrepreneurship are organized each year.

While the size and scope of the field is apparent, the extent to which entrepreneurship has matured as a scientific discipline remains subject to question. Despite the growing volume of research in the field, there still remains the quest for cohesive theory building. Amit, Glosten and Muller (1993, p. 815) explain: "Why do some new ventures succeed while others fail? What is the essence of entrepreneurship? Who is most likely to become a successful

entrepreneur and why? How do entrepreneurs make decisions? What market, regulatory and organizational environments foster the most successful entrepreneurial activities? Entrepreneurship research is plagued by these and other fundamental, unanswered questions, for which there does not exist a cohesive explanatory, predictive, or normative theory". In a related vein, Ratnatunga and Romano (1997) conducted an analysis of 725 articles, and 16,720 of the literature citations within these articles, in six leading entrepreneurship journals during the 1986-1992 time frame. Although able to identify the main topical areas of research, they characterized the entrepreneurship field in terms of a "garbage can model", where these topical areas reflect a loose collection of ideas rather than a coherent structure with a shared intellectual paradigm. Many isolated facts have been uncovered, but few principles or generalizations have been produced.

One of the clear signs of development within any area of study is the classification of the phenomena of interest. The design and general acceptance of taxonomies, or classification schemes, is fundamental to the advancement of a discipline. They are the primary means for organizing phenomena into groups or categories that lend themselves to systematic investigation and theory development (Hunt, 1991). More fundamentally, classification brings order to a complex and diverse set of objects (e.g., people, products, organizations, activities, situations) by grouping them in a logical and meaningful manner.

A number of classification schemes exist within entrepreneurship. Efforts have been made to classify types of entrepreneurs, types of ventures, forms of financing, forces that produce entrepreneurial events, stages in venture evolution, and activities in the entrepreneurial process, among others. At the same time, a thorough analysis of these typologies and the surrounding literature failed to uncover any systematic identification and critique of classification schemes within the discipline. The purpose of this paper is to assess the progress to date in terms of classification within entrepreneurship, and the extent to which taxonomies are contributing to the advancement of theory-building and the general development of the field.

THEORY IN ENTREPRENEURSHIP: WHERE ARE WE?

Entrepreneurship remains a young discipline. Arguably, one has to distinguish its development within the field of economics from its development in business schools. These two paths of progress have rarely converged, and neither has made much contribution to the furtherance of the other. In economics, the treatment of entrepreneurship extends to the early 19th century. Yet, entrepreneurial behavior represents a dynamic that fundamentally challenges the very precepts of most economic theory. As a result, it is not surprising that the theoretical contributions of economics over two hundred years are relatively paltry (Hebert & Link, 1988; Baumol, 1996). Quite separately, entrepreneurship has developed as a business discipline by borrowing, building upon, and adapting theoretical and conceptual work from other fields. It is as a business discipline that the vast majority of published research in entrepreneurship has originated, almost all of it in the second half of the twentieth century.

Bull and Thomas (1993, p. 181) note, "It is appropriate that any discipline, whether embryonic or mature, should take stock of its theoretical progress once in a while — and entrepreneurship is no exception." Interest in the nature of theory in entrepreneurship, as opposed to the nature of entrepreneurship, really began to develop in the 1990's. A major theory-building conference was held in 1991 at the University of Illinois, where scholars convened to discuss the field of entrepreneurship (see Bull & Thomas, 1993). Since then, the growth in published research has been nothing short of dramatic. Academic papers relating to entrepreneurship from fields such as anthropology, economics, engineering, finance, history, marketing, organizational behavior, psychology, and sociology have appeared in at least 50

separate academic journals. And yet, the majority of what continues to be published is neither explicitly positioned within a particular theoretical paradigm, nor does it propose new theory or advancements in existing theory (MacMillan & Katz, 1993; Ratnatunga & Romano, 1997; Vesper & Gartner, 1997).

Is there theory in entrepreneurship? The answer is clearly "yes", but with some caveats. While research methodology has progressed from empirical surveys of entrepreneurs toward more contextual and process-oriented research, progress in establishing a theory base has clearly lagged (Amit, Glosten & Muller, 1993; Shane & Venkataraman, 2000). Similarly, there has been no emergence of a generally accepted theory of entrepreneurship. A theory of entrepreneurship is defined as a verifiable and logically coherent formulation of relationships, or underlying principles, that either explain entrepreneurship, predict entrepreneurial activity (e.g. characterize conditions that are likely to lead to new profit opportunities and to the formation of new enterprises), or provide normative guidance (i.e. prescribe the right action in particular circumstances).

At the same time, hundreds of pieces of entrepreneurship research exist with potential theoretical significance or having an implicit or explicit theoretical foundation. In practice, these theory pieces stand independently, isolated from other pieces of theory and from other disciplines (Kuratko & Hornsby, 1996). What is now needed is for researchers to begin to forge intellectual alliances with compatible theory pieces outside their own narrow interests, so that more comprehensive and more realistic theories of entrepreneurship can emerge. Only when isolated theoretical pieces can be fitted into competing theory sets will we be able to make strides toward the identification of superior ways of understanding the complex process of entrepreneurship (MacMillan & Katz, 1992, Venkataraman, 1997).

Inadequate theoretical progress undermines the discipline itself. There are at least five ways in which entrepreneurship as a discipline is adversely affected:

- We fail to reach closure on the fundamental definitions, phenomena of interest, units of analysis, and disciplinary boundaries in the field of entrepreneurship, leading to a state of confusion, incoherence and frustration;
- It is difficult to establish the priorities in terms of the major research questions that require attention, or a logical order and agenda for addressing these questions;
- Research is published without establishing sound theoretical underpinnings, making it more difficult not only to judge the contribution of the research, but also to establish its relationship to other research;
- Because much published research is not part of a clear theoretical stream in which standards for rigor are established and evolve over time, there is inconsistency in the level of rigor applied to the development of hypotheses, the construction of research designs, and the selection of analytical approaches;
- The lack of theoretical progress is directly responsible for our limited ability to explain and predict developments in entrepreneurial practice.

CLASSIFICATION AS PART OF THE EVOLUTION OF A DISCIPLINE

Disciplines evolve in differing ways and at differing rates. Although it is not clear if there are any consistent patterns in evolution across disciplines, stages of development can be identified within a given discipline. For instance, Bartels (1970) discusses an evolution within the field of marketing through periods of discovery, conceptualization, integration, development, reappraisal, and reconceptualization. As disciplines evolve, agreement is reached regarding the subject matter of interest. The relevant phenomena are described and classifications are produced. Attempts are made to discover underlying uniformities or patterns among the

phenomena which comprise the subject matter. Empirical regularities are established and generalizations are made. From these generalizations emerge laws, principles and theories, which are subject to ongoing validation, enhancement and modification. New theories emerge, some of which are competing, and existing theories are occasionally degraded or abandoned. Similarly, paradigms, or traditions of scientific research consisting of laws, theories, applications, and instrumentation, emerge and are periodically displaced by new paradigms (Kuhn, 1970).

The discussion above suggests that an important step in disciplinary evolution is the achievement of some consensus regarding how the various phenomena of interest should be categorized or grouped (Doty & Glick, 1994). Classification plays an especially instrumental role in the early stages of a discipline. As a case in point, Carolus Linnaeus, the father of the classification of plants and animals, published his system in 1735, and it is still universally used today with relatively minor modifications. The importance of classification in most fields of study can be seen both in the amount of effort devoted to generating schemes and the amount of subsequent work that is based upon those schemes. A diversity of modern examples illustrates this point, ranging from Bloom's taxonomy of levels of intellectual behavior (1956) to Flynn's classification of parallel machines (1984) to the classification of concepts in consumer education developed by Bannister and Monsma (1980). Classification is, of course, an ongoing activity within a discipline, where certain schemes are improved, others are abandoned, and still others are introduced.

The study of the general principles of scientific classification is called taxonomy. It serves a number of purposes. Classification enables researchers to reduce the vast number of possibilities regarding some phenomenon in the natural world to proportions that can be intelligently grasped and manipulated. Specifically, the researcher is attempting to partition some universe of objects, activities or other phenomena into categories or sets that are homogeneous with regard to selected categorical properties. Blalock (1969) refers to this process as a reduction of what he calls a "property space". By reducing diversity, researchers can identify patterns in complex phenomena.

Classification enables the researcher to know which units of analysis to include or exclude in a particular study or analysis. Moreover, without a shared view of the domain of some phenomena and the conceptual architecture of a hierarchy, researchers will classify concepts according to their own viewpoint, and it becomes difficult to cross-validate findings of different studies. Because a taxonomy is designed around major differences among categories of some phenomenon (and similarities within), the influence of confounding factors in one's research is reduced, allowing the researcher to more clearly identify relationships. Relationships can be found in relevant sub-groups that are not present in larger, pooled samples. Also, a taxonomy that specifies relationships among categories enables prediction of the categories to which the findings of a particular study can be generalized. In the process of clarifying overall and sub-group relationships, the ability to build theory is enhanced. In a related vein, a classification scheme can lend itself to the generation of propositions and hypotheses, and is an important step in the establishment of scientific laws. Finally, classification can help improve the teaching of entrepreneurship. Schemes can serve as useful pedagogical frameworks for breaking down a complex phenomenon into broad sub-categories that then allow the instructor to explore the complex nuances of a given category.

Little attention has been devoted to the state of classification in entrepreneurship. Further, the contributions of effective classification have not been realized in the field of entrepreneurship, as it is difficult to identify any generally accepted classification scheme (Shane & Venkataraman, 2000). Take, as an example, the classification of types of entrepreneurs. While various writers have noted the existence of two dominant categories, namely craftsmen

and opportunists, Woo, et al., (1991) have provided evidence that raises serious questions regarding the applicability of this distinction to the general population of entrepreneurs. As a result, while the entrepreneur is clearly an important phenomenon within entrepreneurship, the inability to properly establish categories of entrepreneurs holds back the advancement of the discipline. Research gets conducted on broad samples of entrepreneurs (e.g., on their psychological traits, attitudes, and behaviors) and attempts are made to identify patterns or relationships without a clear sense of how the subjects should be grouped. Relationships in relevant sub-groups are missed because of the focus on broader pools. Different researchers examine sub-groupings of their own choosing. Findings of studies cannot be generalized to a given group or category of entrepreneur. In the final analysis, our explanatory and predictive abilities when it comes to entrepreneurs are severely limited.

APPROACHES & CRITERIA FOR EFFECTIVE PHENOMENA CLASSIFICATION

Classification can be approached deductively or inductively. The deductive approach, sometimes referred to as 'logical partitioning', involves a priori determination of categories (Hunt, 1991). The researcher first specifies the phenomena to be categorized, then determines the properties or characteristics (and combinations thereof) to be used to define groups or categories, then labels the categories, and only then attempts to analyze actual data using the schema. The categories that are produced via logical partitioning are most often defined by one or only a few properties or characteristics. Further, while the schemes produced with the deductive approach can exist at a single level (e.g., classifying entrepreneurs as either craftsmen or opportunists), this method also facilitates the generation of multi-level schemes (e.g., classifying entrepreneurial activities first as either being independent or corporate, and then further classifying the corporate activities as initiating new businesses versus transforming/renewing the existing business). Deductive classification can also produce cells or categories in which no cases currently exist, raising the possibility of future discovery.

With the inductive or empirical approach, which is also called 'grouping', the researcher does not impose the categories (Hunt, 1991). Rather, he/she starts with data, from which the classification system is derived. Typically, a statistical method such as factor analysis, cluster analysis or multidimensional scaling is used to generate the categories. Not only does the researcher need less a priori knowledge regarding the relevance of various properties in defining categories, but the statistical tools employed allow for the consideration of large numbers of properties or characteristics in defining categories. The resultant schemes are most often single-level.

A related distinction is drawn between special and general classifications (McKelvey, 1982, Woo, et al., 1991). In the former instance, categories are defined by a small number of attributes that reflect the primary interest of the researcher. An example would be the growth orientation of the individual as a factor in classifying entrepreneurs, where the researcher is specifically interested in how growth orientation may account for differences in other variables, such as educational background or failure rates. With general classifications, a more comprehensive set of attributes is employed, and the researcher is attempting to identify generic types that reflect the underlying population.

Classification in entrepreneurship has tended to be deductive, in part reflecting the lack of sophistication in research methodologies found in much of the research. An exception is the work of Woo, Cooper, and Dunkleberg (1991), in which they empirically produce a number of different classifications of entrepreneurs, principally to demonstrate the inadequacies of the craftsman-opportunist distinction. Classification efforts also tend to rely on relatively few attributes or characteristics to define categories and to focus on single-level rather than hierarchical schemes. In addition, approaches in entrepreneurship tend to assume that

members of a given category must share all of the characteristics that describe that category, rather than having *many* but not necessarily *all* of the characteristics in common. This may again be related to the reliance on one or relatively few variables when defining categories.

Apart from the methodology employed, many different kinds of classification are possible for virtually any phenomenon. Thus, entrepreneurial ventures can be classified based on growth orientation, innovativeness, technological sophistication, the reasons for which they were started, the form of ownership, and a large number of other criteria. The issue becomes one of determining what is a "good" classification scheme.

Some useful criteria for evaluating alternative classification schemes include the following (Dickinson, 1986; Woo, et al., 1991):

- Adequate specification of the phenomenon to be classified;
- Adequate specification of the properties or characteristics on which the classes will be defined, and the selection of properties that explain similarities and differences between groups;
- Mutually exclusive categories;
- Collectively exhaustive categories;
- Meaningfulness, or informativeness of the scheme;
- Applicability of the scheme as the phenomenon of interest evolves over time.

The nature of these criteria again makes it clear why classification in entrepreneurship has not advanced all that far. Consider the classification of types of entrepreneurial ventures. While the phenomenon to be classified might seem obvious, what constitutes a venture is not necessarily apparent. Are there general parameters that should be applied in terms of when something becomes a venture (e.g., formal registration of the business, first sale, established premises), how large the organization can be, or the age of the venture? Determination of the properties that define the classes or categories of ventures is especially problematic. Any number of the thousands of variables that characterize a venture may be significant, depending on the purpose of the classification effort. Thus, while the Small Business Administration relies on classification based on size for public policy purposes, a scheme based on technology, labor intensity, what is being sold, and market potential might be relevant for explaining or predicting resource requirements, operational problems encountered, or performance. Alternatively, it is possible to find different categories of ventures defined by different sets of variables. Mutual exclusivity for organizations is a separate challenge, especially when moving beyond a single classificatory variable. Thus, growth orientation as a single variable might be used to distinguish lifestyle businesses from rapid growth (or 'gazelle') businesses. However, mutual exclusivity becomes difficult as additional variables are introduced. A rapid growth business is often not a high-tech business, may not be a high-risk business, and may be family or non-family controlled. The collectively exhaustive criterion also tends to encourage a reliance on fewer and simpler variables in classification efforts. Growth orientation represents a case in point. Even with growth, one must be careful, in that there is a need to ensure the scheme is based on the correct measure of growth (e.g., growth in assets, employment, revenues, or profits), while also recognizing that the categories may need to allow for negative growth, zero growth, and different rates of positive growth in order to capture all firms. The meaningfulness of the scheme raises an additional set of concerns. For example, to what extent does a distinction between microenterprises and small businesses help us to formulate theory or derive law-like generalizations about the phenomenon of entrepreneurship? Alternatively, does this distinction aid the practicing entrepreneur or the investor in some way? Does it provide guidance to the public policy-maker? The answer to all of these questions is that the distinction could conceivable make contributions in these areas, but only if empirical research

efforts are predicated on the distinction, allowing researchers to test hypotheses regarding differences in needs, requirements, problems encountered, common errors, strategic and operational approaches and performance outcomes between microenterprises and small businesses.

ASSESSING WAYS PHENOMENA ARE CLASSIFIED IN ENTREPRENEURSHIP

While little consensus has emerged around virtually any form of classification in entrepreneurship, there are actually a number of different classification schemes to be found in the literature. Classification efforts have been applied to entrepreneurs, ventures, venture strategies, and a variety of other phenomena. In an attempt to evaluate progress to date, the discussion below considers efforts at classification in five areas. Rather than listing out every scheme that has been proposed or implied in these five areas, a representative range of schemes has been identified.

Beginning with the entrepreneur, classification is critical, in that it moves the field away from the narrow historical use of trait theory. Roughly forty years of research on psychological traits and sociological descriptors has produced a tendency to think in terms of a standard prototype of the entrepreneur (e.g., individualistic, achievement motivated, calculated risk-taker, tolerant of ambiguity, with an internal locus of control). Alternatively, classification implies that there are multiple types of entrepreneurs, some of whom may not be strong on all of the traits traditionally associated with the entrepreneur. Thus, Miner's (1996) scheme allows for 'expert idea generators' who are more risk averse, and 'real managers' who have a more positive attitude towards authority. Unfortunately, in this particular instance, the scheme uses different properties to define the various categories.

Table 1 summarizes a number of the classifications of entrepreneurs proposed to date. These schemes have primarily involved deductive classification, although some of the later studies employed an inductive methodology. Most prevalent among these is the craftsman/opportunist dichotomy, although some have noted that these two categories represent end-points, between which we must allow for an intermediate category. The underlying characteristics used to define these categories have included the entrepreneur's goals, attitudes, motivations, background, and management style. Ironically, many of the psychological traits emphasized in the literature on entrepreneurs are ignored in this classification. Woo, et al. (1991) demonstrate that the same entrepreneur can be grouped as a craftsman or as an opportunist depending on which underlying characteristics are emphasized, and that the ability of the scheme to differentiate becomes more problematic as the number of characteristics is expanded. Their work raises serious questions as to the robustness of the schema, and whether it truly represents the population of entrepreneurs.

Thus, it should not be surprising that there has been no general acceptance among scholars of a categorization of entrepreneurs. The distinction between craftsmen and opportunists is not a major factor guiding contemporary research agendas, and in fact is ignored in most of the research addressing aspects of the entrepreneur. While classification should serve to reduce the vast number of possibilities regarding entrepreneurs to more manageable proportions, it would appear that the research has moved too far in the direction of over-simplification. Our inability to identify theoretically or managerially meaningful patterns among groups of entrepreneurs suggests a need for schemas that allow for more diversity, and produce polythetic classes. An example is the work of Miner (1996), who emphasizes both trait theory and the entrepreneur's operational approach (e.g., salesmanship and networking versus innovating) to produce four categories of entrepreneurs.

Table 1: Classifications of Entrepreneurs

Smith (1967); Smith & Miner (1983)	Craftsmen/ Opportunists
Braden (1977)	Caretakers/ Managers
Kets de Vries (1977)	Addition of R&D-Inventor-Technical Entrepreneur
Webster (1977)	Cantillon/ Industry-Maker/ Administrative/Small Business Owner-Operator/ Independent
Dunkelberg & Cooper (1982)	Craftsmen/ Independent/ Growth
Stewart, Watson, Carland & Carland (1999)	Small Business Owners/ Entrepreneurs
Lafuente & Salas (1989)	Craftsmen/ Managerial/ Security/ Family/ Risk
Vesper (1990)	Solo Self-Employed/ Team Builders/Independent Innovators/ Pattern Multipliers/ Economy of Scale Exploiters/ Acquirers/ Buy-Sell Artists/ Conglomerators/ Apparent Value Manipulators
Kao (1991)	Creative-Charismatic/ Conventional
Miner (2000)	Personal Achievers/ Super Salespeople/ Real Managers/ Expert Idea Generators

Classification efforts directed at entrepreneurial ventures have also wrought a number of schemes, but with perhaps more convergence. Vesper (1990) discusses classification based on growth level, capitalization level, industrial sector, technological type and degree of innovation. However, as illustrated in Table 2, the prevalent schemes focus almost exclusively on the growth propensity and personal objectives of the entrepreneur, and the realized or potential growth rate of the venture.

Table 2: Classifications of Entrepreneurial Ventures

Webster (1977)	Large Payoff-Many Principals/ Small Payoff-Few Principals/ Large Payoff-Few Principals
Filley & Aldag (1978)	Craft Firm/ Promotion Firm/ Administrative
Cooper & Dunkelberg (1981)	Industry Sector: Retail, Construction, Manufacturing, Mining, Professional, Financial, Wholesale, Service, Agricultural
Carland, Hoy, Boulton, & Carland (1984)	Low Growth/ Growth/ Very High Growth
U.S. Small Business Administration (1996)	Microenterprise/ Small Business/ Medium-sized Business/ Large Business
Ronstadt (1984)	Lifestyle/ Small-Profitable/ High Growth
Carland & Carland (1998)	Small Business/ Entrepreneurial Firm
Vesper (1990)	Low-pay, Stably Small/ High-pay, Stably Small/ High-Growth
Sexton & Bowman-Upton (1991)	Marginal/Lifestyle/Successful/High Growth
Roberts (1991)	High Tech/ Non-High Tech
Kunkel (1996)	Independent/ Corporate
Hisrich & Peters (1998)	Lifestyle/ Foundation/ High Potential-Gazelle

Other schemes exist, such as characterizing firms in terms of dominant strategy (e.g., prospectors, analyzers, reactors, defenders), but these approaches are not unique to entrepreneurial ventures. Moreover, they are better examples of the earlier-noted 'special' as opposed to 'general' classifications. The more prevalent general approaches tend towards a three-category distinction, including the marginal enterprise, the small and reasonably profitable firm, and the rapid-growth company. Implicit in and consistent with these distinctions, is the craftsman/opportunist categorization of entrepreneurs discussed above.

Of all attempts at classification in entrepreneurship, this growth-based categorization of ventures is perhaps the most widely accepted. It meets the basic criteria for classification relatively well. However, its popularity may principally be due to empirical evidence of significant differences on key performance variables (e.g., job creation, inventions, financial performance) across the three types. Yet, while the fact that rapid growth firms (gazelles) contribute disproportionately to economic growth is noteworthy, the real theoretical and practical value of this scheme can be realized only if researchers can relate it to a variety of managerial variables. Examples of such variables might include resource requirements, key operational problems encountered, strategies employed, appropriate structures, methods by which returns are extracted, harvesting approaches, critical indicators of impending problems, and survival rates over time. The fact that this value has not been realized may reflect the limitations of the schema. Most notable among these limitations is the fact that firms are being classified using at most two characteristics, both of which are concerned with growth.

A third area in which attempts at classification have been made is concerned with the business concept, or what the entrepreneur actually does. Entrepreneurs seek to achieve unique combinations of resources that create value in the marketplace. The nature of the value-creating concept can take many forms, and can be grouped in many ways (see Table 3).

Table 3: Classifications of What the Entrepreneur Does: Business Concept or Approach

Subgroup A: How the Entrepreneur Gets Into Business	
Olm & Eddy (1985)	Start New Business/ Take Over-Assume Leadership/Purchase or Acquire Existing business/License or Franchise Business Rights
Vesper (1990)	Primary: New Product or Service/ Parallel Competition/ Franchising/ Acquisition of Going Concern
Stevenson, Roberts, Grousbeck, Bhide (1999)	Solo Contracting/Niche Marketing/ Speed/Networking or Syndication/ Institutionalized Hustle/ Trading or Speculating/ Revolutionary Initiatives
Schendel & Hofer (1979)	Self-employment/ Building Workforce/ Product Innovation/ Exploitation of Underutilized Resources/ Economies of Scale/ Pattern Multiplication/ Takeover/ Capital Aggregation/ Speculation
Maidique & Patch (1978); Covin, Slevin & Heeley, 2000	Enter as Leader-First to Market/ Fast Follower/ Cost Minimizer-Late to Market/ Market Segmenter or Specialist
Sub-group B: The Degree of Innovativeness in the Concept	
Marquis (1969)	Product Innovation/Service Innovation/Process Innovation
Booz-Allen and Hamilton (1979); Crawford & Di Benedetto (2000)	New to the World/ New to the Market/New Improvements/ New Application/ Repositioning/ Cost Reduction
Rogers (1983); Tidd, Bessant & Pavitt (1997)	Discontinuous Innovation/ Dynamically Continuous/ Continuous/ Imitation

It could be argued that these schemes are actually additional types of entrepreneurial ventures. However, there would appear to be a distinction between the organizational context and the business concept. Distinctions such as this serve to reinforce the importance of adequately specifying the phenomenon to be classified.

The classifications presented in Table 3 are generally related to whether the entrepreneur initiates something new (and the degree of newness or uniqueness) or pursues something that already exists. It is further suggested that there are actually two sets of schemes, with the second being a subset of the first. The first sub-group explores ways in which the entrepreneur gets into business, while the second sub-group focuses more on the degree of innovativeness in the concept, assuming the entrepreneur is starting his/her own business rather than purchasing, taking over, inheriting, franchising, or licensing. While there is considerable overlap among the schemes presented in Table 3, it would seem that the first group can be simplified as follows: a) new business-product line defined by self, b) new business-product line defined by others, and c) existing business. Similarly, the second group consists of products, services and processes that are a) radical innovations, b) continuous innovations, and c) imitations.

Another important issue concerns the need to distinguish between what the entrepreneur does to achieve initial success (or failure) versus what they do to sustain the enterprise over time. A number of the classification schemes in Table 3 are applicable to the entrepreneurial venture as it evolves over time. Thus, a venture begun around a new product may engage in parallel competition or acquisitions over time, and product innovation may be followed by process innovation.

Classifications of what the entrepreneur does have largely been ignored when it comes to the design of research. One exception is the tendency in some of the published research to distinguish, and occasionally test for differences, depending on whether the entrepreneur started the business, took over a family business, purchased an established business, or acquired franchise rights. Yet, this would seem to be an area that holds considerable promise for moving the field forward. What the entrepreneur does would seem to have major implications for the type of entrepreneur, the type of venture, the environmental conditions under which the entrepreneur operates, resources that are critical for success, venture performance, and harvesting approaches, among other variables.

The fourth area in which there has been some progress in terms of classification involves the life cycle stages a venture moves through over time. Intuitively, this is also an area rich with theoretical potential, as the managerial competencies and styles, organizational strategies, resource requirements, structural approaches, rewards and controls required for venture success are likely to change with time. Table 4 summarizes eight of the various perspectives on the stages through which a venture evolves. The value of this type of classification from a managerial vantage point is reflected in two of the derivative schemes presented in Table 4, those of Tyebjee, Bruno, and McIntyre (1983) and of Wetzel (1979). Respectively, these authors demonstrate how marketing needs and approaches, and financing needs and approaches, can be expected to vary over the stages of a venture.

At the same time, these schemes suffer from a number of limitations when it comes to classification, most notably the ability to clearly delimit one stage from the next. The underlying characteristics used to define the stages or categories differ from size and age to internal managerial variables such as administrative controls, structure and performance orientation. Where multiple characteristics are employed, classification may be hindered because a given company falls into one category or stage based on certain of the defining characteristics, and another stage based on other characteristics. A more fundamental concern

with these schemes is their deterministic nature. Not only do firms not necessarily progress in a completely linear fashion, but many seem to survive at an arrested state of organic development (Child & Kieser, 1980). Arguably, however, these schemes are more descriptive of the types of stages encountered in the start-up and development of an entrepreneurial venture than of a larger conglomerate or multinational organization.

Table 4: Classifications of Life Cycle Stages

Greiner (1971)	Creativity/ Direction/ Delegation/Coordination/ Collaboration
Kroeger (1974)	Initiation/ Development/ Growth/Maturity/ Decline
Adizes (1999)	Courtship/ Infancy/ Go-Go/ Adolescence/Prime Organization/ Maturity/ Aristocracy/Early Bureaucracy/ Bureaucracy/ Death
Schendel & Hofer (1979)	Pre-Start-up/ Start-up/ Profitability/ Later Growth/ Disposition
Wetzel (1979)	Financing Stages: Research and Development/ Start-up/ Early Growth/Rapid Growth/ Exit
Robidoiux (1980)	Start-up/ Liquidity/ Delegation/ Leadership/Financing/ Prosperity/ Continuity
Churchill & Lewis (1983)	Existence/ Survival/ Success-Disengage/ Success-Growth/ Take-off/ Resource Maturity
Tyebjee et al. (1983)	Innovation/ Implementation/ Growth/Stabilization/ Renewal
Tropman & Morningstar (1989)	Innovation/ Implementation/ Growth/ Stabilization/ Renewal
Timmons (1999)	Pre-start-up/ Start-up and Survival/ Early Growth/ Maturity/ Harvest-Stability

A final example of classification efforts can be found in the area of financial resources (see Table 5). This area provides an interesting contrast to the others, in that types of financing do not represent a behavioral phenomenon, and have fewer idiosyncracies and variability than entrepreneurs or entrepreneurial ventures. Not surprisingly, the resulting categories are less controversial, have been generally accepted by scholars, and play a clear role in guiding teaching and research. While the classification schemes in Table 5 are relatively simple, and typically dichotomous, most of the schemes are actually hierarchical, unlike those presented above. Thus, equity can be subdivided into private and public, and private equity can be subdivided into angels/informal, venture capital firms and private offerings. Private offerings could be further subdivided into initial and subsequent. Unfortunately, the categories are not all mutually exclusive.

Table 5: Classifying Financing Sources for Entrepreneurial Ventures

Internal Financing/ External Financing	Formal/ Informal
Risk Capital/ Venture Capital	Individual/ Institutional
Seed Capital/ Growth Capital	Debt/ Equity
Active/ Passive	Microfinance/ Small Business Finance/ Rapid Growth Finance

A SUMMARY EVALUATION OF THE SCHEMES

The general inadequacy of our progress in classifying phenomena can be seen if a representative classification scheme from each of the five areas identified above is evaluated using the five criteria for effective classification discussed earlier (see Blaylock, 1969; Hunt, 1991). Table 6 summarizes the application of these criteria to the schemes. As can be seen, all of the schemes violate at least one of the criteria. The most common shortcomings concern the mutual exclusivity of categories and the meaningfulness of the scheme for research and managerial practice.

To illustrate the application of the evaluative criteria, consider the distinction between types of entrepreneurs. The craftsman/opportunist scheme suffers in at least four fundamental ways. The phenomenon to be classified is ostensibly entrepreneurs, but the lack of consensus over what constitutes an entrepreneur raises problems in classifying them. By inference, corporate and social entrepreneurs are not included here. It is also less clear whether the scheme should be applied to individuals who take over a family business or acquire a firm. In addition, an R&D-inventor could fit into either of the two categories in this scheme, although less clearly as a craftsman, or could represent a third category. A second problem concerns the underlying attributes (e.g., motivation, background, management style, social orientation) used to define categories. Different researchers might employ the same scheme, but define the categories using their own sets of attributes. Further, where the same criteria are not used to differentiate across categories, mutual exclusivity becomes problematic. Finally, the usefulness of this classification scheme is unclear. On one level, it might be hypothesized that these groupings could tell us something about how the entrepreneur operates, the nature of his/her needs, or the success rates or outcomes of his/her venture. Yet, little in the way of conclusive findings exists in these areas, and addressing these questions conclusively does not appear to be a priority in contemporary research efforts. On another level, it might be argued that this grouping helps to simplify a complex universe and so represents a building block that can be further developed (i.e., sub-categorized) in ways that ultimately help us understand the complexities of the universe. However, the failure to achieve progress in further classifying opportunists may be more reflective of the perceived inadequacy of the basic schema.

Perhaps the biggest challenge in each of these areas concerns the selection of attributes or characteristics for use in defining groupings that have theoretical and managerial value. The relevant attributes are not always the most obvious. Consider birds as an example, a class of warm-blooded vertebrates. While it would seem straightforward to have grouped them because of their ability to fly, there are mammals that fly and birds that do not. In fact, the property that ties them together is the ability to produce feathers. There has been a tendency to rely on more obvious properties in entrepreneurship research. It may be that deeper insights can be realized from classifying ventures based on less obvious variables such as ownership structure, operating leverage or market orientation. It is also important that we rely on a consistent set of properties for defining all the categories in a scheme, rather than "switching horses in midstream" (Bunge, 1967).

PRIORITIZING CLASSIFICATION NEEDS IN ENTREPRENEURSHIP

It is important that the considerable ambiguity surrounding most attempts at classification in entrepreneurship be removed. Priorities must first be established in terms of what is classified. The ultimate criterion for evaluating classification schemes is usefulness. Does the scheme help entrepreneurs solve problems? Is it theoretically productive, in the sense that it helps researchers develop principles or law-like generalizations about aspects of entrepreneurship? The priorities for classification can thus be linked to the great questions in

Table 6: Evaluating a Classification Scheme in Each of Five Areas

Phenomenon Being Classified	*Categories from a Representative Scheme*	*Specification of Phenomenon*	*Specification of Classification Properties*	*Mutually Exclusive Categories*	*Collectively Exhausting Categories*	*Meaningfulness & Informativeness*
The Entrepreneur	Craftsmen Opportunists	√-	√-	√-	√	√-
The Venture	Lifestyle Small profitable High growth	√	√	√	√	√-
The Entrepreneur's Approach or Concept	Primary new product/service Parallel competition Franchising/ licensing Acquire/take over going concern	√+	√	√-	√+	√
The Stage of Venture Development	Existence Survival Success/ withdrawal or success/growth Take-off Resource maturity	√	√	√-	√	√
The Financial Resources	Risk capital Venture capital	√+	√	√-	√+	√

Key: √+ = scheme clearly satisfies the evaluative criterion
√ = scheme generally satisfies the evaluative criterion with some limitations
√- = scheme seriously violates the evaluative criterion

entrepreneurship. Consider examples of six such questions, and the resulting classification needs in each of these areas:

- **Both as a field of study and a practical pursuit, what is entrepreneurship?** The need here is for classification of knowledge areas in the discipline as a whole. Such an integrative hierarchical scheme would combine the different classification schemes that have been proposed and that have achieved some acceptance. It will help to explain what entrepreneurship is about in its totality (i.e., the whole picture and its patterns) as well as in its specifics.

- **When does the "act" of entrepreneurship actually start and when does it end?** The acceptance of entrepreneurship as a process suggests that it can be ongoing or continuous, while there can be multiple entrepreneurial events initiated by a given entrepreneur or in a given venture. However, it must begin at some point, and it must be possible for it to end at another point. Critical classification needs in this regard include types of triggering events, methods for initiating a venture or entrepreneurial event, types of models of the venture, and types of harvesting or exit methods.

- **Who is responsible for entrepreneurship? What is the nature of the entrepreneur or the entrepreneurial team?** Entrepreneurship does not happen without individuals and teams to drive the process, persevere, adapt, and find creative ways around obstacles. However, there is a need to move beyond classification based on traits to identifying the types of entrepreneurs and entrepreneurial teams based on what they do, the number of things they do, their entrepreneurial approaches or styles, and the roles that they play.

- **What is the entrepreneurial context and how does this context change over time?** The issue here concerns where entrepreneurship happens, and how it differs in various contexts. Classification should address different types of organizational settings (e.g., start-up, corporate, social) and types of ventures from the vantage point of what makes that context different, and what are the requirements for success in that context. Just as important is the need to classify changes in the context over time, and how these changes impact on the entrepreneur's needs and requirements.

- **Why do various outcomes derive from entrepreneurial behavior, and what is the nature of those outcomes?** Issues here exist at two levels: micro and macro. At the micro level, the principal concern is with the actions of the entrepreneur that impact on success or failure in the venture. Classification issues include types of resource acquisition approaches, types of managerial approaches, types of growth strategies, and types of failures and successes. At the macro level, the concern is with the societal or community impact of entrepreneurial activity. The corresponding classification needs include types of societal costs, types of benefits, and types of entities impacted.

- **What is the nature of the environmental conditions that facilitate entrepreneurial activity?** The desire to foster entrepreneurial attitudes and behaviors at the levels of the individual, organization, community and society gives rise to a host of classification needs. Examples include relevant types of societal infrastructures (i.e., economic, political, regulatory, financial), types of family, social, cultural and work contexts, types of role models, and types of entrepreneurial networks.

Clearly, these are not independent questions, and the development of classification schemes that facilitate our ability to address any given question has implications for all of them. Moreover, as some closure is reached in these areas, the more robust schemes may be helpful in identifying the subsequent questions deserving focus.

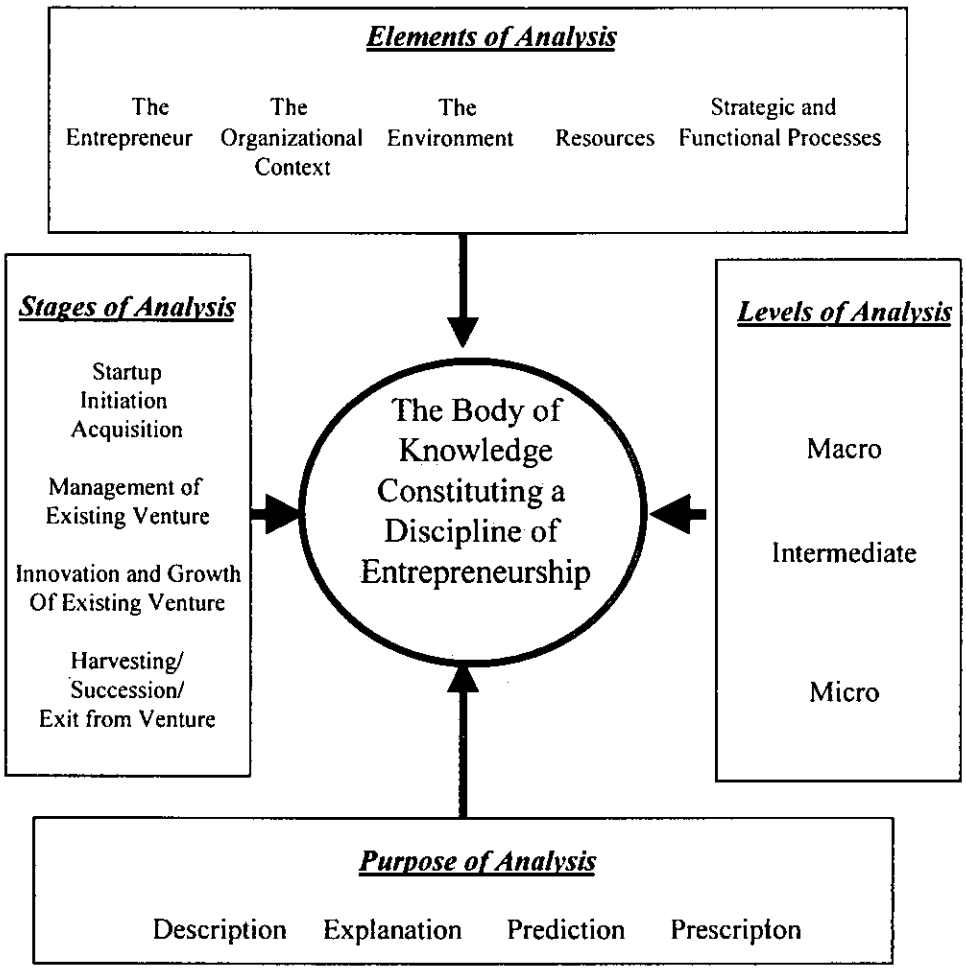
TOWARDS A SYSTEMATIC CLASSIFICATION OF THE FIELD

What should be the conceptual architecture of entrepreneurship? In this article, classification in some of the more critical areas of the discipline has been considered. Of the six questions raised above, the first may be the most profoundly important in terms of scientific progress, in that it requires us to look at the discipline as a whole. In essence, is it possible to develop a comprehensive, multi-level classification scheme that integrates contemporary knowledge in the field? This is an ambitious task, and represents the next step in an ongoing research program.

The phenomena in entrepreneurship are typically not fixed or pre-existing, such as with the classification of plants and animals. They are dynamic, evolve relatively quickly, and hybrid forms continually appear. Thus, a microenterprise at the close of the 20th century is different in fundamental ways from one at the close of the 19th century. As a result, it is important that any attempt at a taxonomy for the discipline as a whole allow for dynamism and discipline evolution.

As a first step toward such an integrating taxonomy, it is necessary to establish broad parameters that capture the main body of work in the contemporary field of entrepreneurship. This can be accomplished by making four distinctions in summarizing the extant work in the field: elements or focal points of analysis, stages of analysis, levels of analysis, and purposes of analysis. Consider the framework proposed in Figure 1.

Figure 1: A Framework for Organizing Knowledge and Research in Entrepreneurship



First, research in entrepreneurship tends to concentrate on five major elements: the entrepreneur (or entrepreneurial team), the organizational context, the environment, resources, and strategic and functional processes. The entrepreneur is assessed in terms of background, traits and characteristics, attitudes and perceptions, intentions and behaviors, and outcomes. Research on organizational context addresses such issues as start-up versus corporate or non-profit contexts, high versus low-tech contexts, franchising, family businesses, and home-based businesses, among others. Examples of environmental issues include sources and windows of opportunity, as well as aspects of the external environment that facilitate or hinder entrepreneurial activity. In the resource area, the research tends to examine types (what is needed), timing (when it is needed), and acquisition (how it is obtained). Strategic and

functional processes include types of business strategies as well as the interface between the entrepreneurial venture and such functional process activities as marketing, research and development, and information systems.

Second, work in the field of entrepreneurship is generally conducted around particular points in the evolution of a venture. Thus, studies will either focus on issues surrounding the initiation of venture, approaches to managing a small business, challenges in accomplishing innovation and growth in a small business, or considerations in harvesting or exiting from a venture.

Next, entrepreneurship research tends to be conducted at one of three levels of analysis: macro, intermediate and micro. Macro-level research concentrates on aggregate economic and social patterns and outcomes, such as the impact of bankruptcy laws on birth rates and death rates of minority versus non-minority-owned ventures in the U.S. economy. Intermediate-level research is concerned with sectors, industries, clusters, and networks, as with a study of the venture capital industry in the Boston Highway 128 corridor. Micro-level research focuses on the venture itself, such as effective approaches to leveraging marketing resources in start-up firms.

Finally, while research frequently has multiple purposes, work in the field can be categorized based on whether its principal purpose is descriptive, explanatory, predictive, or prescriptive. Thus, a study may merely seek to describe (e.g., characteristics of immigrant entrepreneurs), it may attempt to explain (e.g., why family businesses do or do not make successful inter-generational transfers), the purpose may be to predict (e.g., failure rates of firms based on key financial ratios), or its principal purpose may be prescriptive (e.g., what to do to lower the firm's tax liability).

The framework proposed in Figure 1 seeks to capture the diversity and complexity of the field of entrepreneurship in relatively simple form. Any study or research initiative in the field can be characterized based on where it principally falls on each of the four axes of the diagram. In a real sense, each of these axes represents a type of classification. Moreover, it is the position of this article that an integrative classification of the field of entrepreneurship must accommodate elements, stages, levels, and purposes of analysis. There is also significant potential for sub-classifications within each of these four areas, with little progress made at such sub-classification (e.g., types of harvesting approaches, relevant ways to classify resources, categories of macro-level research issues, major forms of prescriptions). Accordingly, the framework can be helpful in guiding future research on classification.

SUMMARY AND CONCLUSIONS

While disciplines evolve at different rates, modern information and communications technology has greatly accelerated the pace of research and knowledge development in virtually all fields. Thus, entrepreneurship, in spite of its relative youth as a major area of research, can be expected to mature quite rapidly in the coming years. It is our belief that the development of entrepreneurship requires that it be approached as an independent field of study that incorporates insights from other disciplines, rather than as an entirely "borrowed" field. Moreover, classification will play a key role in either facilitating or impeding this development. With exponential growth in the volume of published research, classification can bring order and help prioritize areas of focus, ultimately contributing to a theory of entrepreneurship. However, to the extent that there is no agreement on basic classification schemes, researchers feel free to identify their own groupings, and little attempt is made to look for commonalities in findings based on overlapping groupings.

As a given phenomenon in entrepreneurship can be classified in many ways, the selection of any one classification approach shapes our conceptual thinking. Grouping entrepreneurial ventures based on growth orientation or growth rates affects how researchers approach a particular question, and even the questions they choose to address. Our inability to establish consensus on the ways to classify the basic elements of entrepreneurship (the entrepreneur, the venture, the business concept or approach) is a serious shortcoming that is constraining the conceptual richness of the discipline. It leads to a sort of randomness in terms of research questions that get addressed and the methodologies employed. It also results in a shallow understanding of any one category of some phenomenon. Thus, the tendency to distinguish microenterprises from small businesses is beginning to produce a rich body of research on the former, with entire journals and conferences devoted to the unique issues affecting microenterprises.

There is also an important caveat. Classification can also serve to limit the field by establishing boundaries that effectively leave certain issues and phenomena outside the realm of study. Although this would seem advantageous given the current state of the discipline, it is important that efforts at delimiting the field be achieved in a rational and systematic fashion. Examples of such boundary-setting might include the classification of entrepreneurs in such a way as to eliminate social entrepreneurs, or the classification of ventures in a manner that ignores non-profits, or the classification of life-cycle stages in a way that does not allow for joint ventures or acquisitions. While it could simply be argued that the corresponding schemes fail to satisfy the collectively exhaustive criterion, in fact the explicit intention may be to delimit the field. Thus, some of those who define entrepreneurship in terms of innovation and growth would explicitly eliminate management of the conventional small business as an area of interest in the discipline.

Just as important is the need to recognize that, while classifications are not completely value-free, they should not be an argument for certain values or beliefs. Thus, while conceptual thinking is influenced by classification, there must be objectivity to the schemes that are employed. Consider the classification of ventures based on growth rates. Apart from the other shortcomings of this scheme, there may be a tendency, when research is conducted and implications are drawn, to view high growth firms as inherently better or more desirable than low growth or lifestyle ventures.

Ultimately, classification represents a systematic and explicit approach to grouping together similar and ostensibly dissimilar objects and subjecting them to rational and critical examination. With classification come rules. For instance, "if" a phenomenon has certain characteristics, "then" it must be placed in a certain category. Some might argue that most of the phenomena in entrepreneurship are not sufficiently fixed or stable so as to allow for such definitive decision rules. However, stability does not really seem to be a problem when it comes to identifying and assessing the core elements that constitute an entrepreneurial event (Shane & Venkataraman, 2000). The real issue lies with the inadequacies of the existing schemes, not with the phenomena of entrepreneurship. A venture can clearly be classified based on its stage of development, as can an entrepreneur be classified based on any number of descriptors. The challenge is, first, to agree on the decision rules, and second, to recognize the need for modification over time. Thus, as a scheme of things changes over time, it must be in response to changing goals and interests of the research community.

There is a need for schemes that are robust in terms of cross-cultural classification, but also a need for flexibility in the design of schemes to reflect environmental context. Consider the question of whether entrepreneurship as a phenomenon is essentially the same in different countries, cultures, political dispensations and economic systems. If the researcher is concerned with entrepreneurs operating in the informal sector within the black townships of

South Africa, he/she may find a given scheme for classifying ventures to be meaningless, or at least not especially enlightening, even though that scheme is quite useful when applied to Silicon Valley ventures.

As we move forward, researchers should be encouraged to both create and discover classification schemes that are generalizable. The discovery of schemes through empirical work (i.e., the inductive or grouping approach) would appear to be the priority. Published work should explicitly identify how the phenomena being studied have been classified in the past, and which categories from which scheme apply to a given study. Where possible, researchers should base their work on accepted classifications, or identify why existing classifications do not apply to or aid the research design. Editors of the journals and organizers of our leading conferences must make it a priority to cross-validate schemes, and encourage the achievement of consensus around schemes that appear to hold the most promise for helping address the leading questions in the discipline. The diffusion of meaningful, informative schemes will make possible the next major leap forward in terms of original theory development within the discipline of entrepreneurship.

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Minet Schindehutte *is Assistant Professor of Entrepreneurship at Miami University. A former brand manager with Shell Oil, she has been a principal in two venture start-ups. Dr. Schindehutte's research interests include values and entrepreneurship, entrepreneurship under conditions of adversity, and product innovation.*

Michael Morris *holds the Cintas Chair in Entrepreneurship at Miami University and is Director of the Thomas C. Page Center for Entrepreneurship at Miami. The author of three books and over one hundred journal articles, his research focuses on entrepreneurship and strategy, entrepreneurial marketing, and corporate venturing. Dr. Morris is a former Fulbright Scholar.*

Donald F. Kuratko *is the Stoops Distinguished Professor in Business and Director of the Midwest Entrepreneurship Center at Ball State University. In addition to a large volume of published research, Dr. Kuratko is the author of seven books, including Entrepreneurship: A Contemporary Approach, one of the leading texts in the entrepreneurship field. He also is the Executive Director of the Consortium of Entrepreneurship Centers.*