Improving the Quality of Business Research by Asking Significant Questions: A Review and Suggested Technique for Increasing Relevance

Aaron Buchko, Bradley University
Kathleen Buchko, Bradley University

We suggest that organizational and managerial research tends to suffer from incremental approaches that marginalize the results. We review the history and nature of organizational research as a means of pointing out the limitations of various approaches to the issue of developing high quality research that can significantly impact research and practice. We note that research that tends to affect practice comes from qualitative studies that lack rigor, but frequently provide meaningful insights. We then examine one technique, called Spectrum analysis, as a means of improving the assessment of organizational information and as a basis for improving the quality of future qualitative research efforts. This is demonstrated by applying the Spectrum analysis to the information from the book Built to Last as a way of providing an example of the utility of such approaches to furthering knowledge of organizational and managerial experience.

The first decade of the twenty-first century has not been kind to the institution of business and business schools. Beginning with the Enron (bankruptcy filing December 2001) and WorldCom (bankruptcy filing July 2002) scandals at the start of the decade, to the collapse of the financial sector sparked by the Lehman Brothers bankruptcy (September 2008), the Bernard Madoff scandal (charges filed December 2008), the AIG debacle (October 2008), the severe economic recession of 2009, and the bankruptcy of General Motors, once the largest of U.S. corporations (June 2009), the business sector has seen more than its share of problems. While the news hasn't been all bad, the general perception of business seems to be somewhat negative among the general public (Podolny, 2009).

Business schools have not been exempt from the criticism levied against the "greedy Wall Street types" and the performance of corporate management. Ghoshal (2005) asserted that "our theories and ideas have done much to strengthen the management practices that we are all know so loudly condemning" (Ghoshal, 2005). Ian Mitroff suggested that business schools foster an amoral learning environment that does not provide managers with proper tools for decision making (Mitroff, 2004).

In seeking to explain the reasons for the erosion of confidence in business and business education, Podolny (2009) suggests that the historical development of the business school is partly to blame. He notes that half a century ago, the Ford Foundation and Carnegie Foundation studies of U.S. business education concluded that the overall quality of scholarship was "terrible." In the wake of these findings, the reports recommended that business schools adopt a more traditional and more rigorous academic approach to the profession, focusing on disciplines that emphasized more quantitative techniques. This approach has by and large been successfully adopted and implemented in most U.S. business schools. The resulting emphasis on quantitative approaches has created greater rigor in the business schools. But at the same time, the study of business has become fragmented as academics working within functional areas fragmented business problems to fit their areas of expertise. The result has been an inability on the part of managers to properly combine the disciplines in decision making, leading in part to the types of disastrous decisions and public relations nightmares that we have observed over the past months.

To address these concerns, it has been suggested that there needs to be more of a qualitative approach to the study of business (Lee, 1999; Morgan & Smircich, 1980; Podolny, 2009). This idea certainly has merit and warrants continued development. However, setting business research and education up as a quantitative versus qualitative issue, implying that these approaches are somewhat in opposition to one another, may miss an essential point (the issue of relevance).

In his presidential address to the member of the Academy of Management in 1994, Hambrick challenged academics with a fundamental question: What if the Academy actually mattered? (Hambrick, 1994). The point of his message was to note that much academic research has virtually little or no impact on the practice of organizational management; that it is academics talking to academics, within the confines of the academy, and does not influence managerial behaviors. This theme has been reiterated several times since, but apparently to no effect, because academics continue to raise the same topics, e.g., (Pearce, 2004; Pfeffer, 2007). As academics interested in the organizational sciences, we must ask ourselves if the methods are more important than the information and knowledge that we obtain. Many quantitative research papers are methodologically interesting and complex, but make only minor contributions to our knowledge base. Likewise, qualitative studies provide for a richness of information and understanding that quantitative approaches lack, but do so at the risk of substituting general principles for empirically based information.

We confess that we, like most of our colleagues, find ourselves caught up in the academic lifestyle. The need for publications for tenure and promotion will continue to drive much of the research process (Pfeffer, 2007), and therefore we can expect "more of the same" in business school research. We believe it is important, though to continually challenge ourselves as academicians and as organizational scientists to continuously improve our tools and techniques for performing research so as to produce research findings that will be truly relevant to our field. The purpose of this paper is to present one approach that may facilitate this process by providing a new tool for systematic evaluation of qualitative data, the Spectrum analysis. In addition, we shall illustrate the potential benefit of this tool by applying it to well-known and publicly available qualitative data from the best-selling business book Built to Last (Collins, & Porras, 1994)

Approaches to Business Research: A Brief History of Business Education

Development of the business schools can be divided into three primary periods: origins and early growth (1880 - 1914), expansion and diversification (1914 - 1940), and reassessment and reorganization (1940 - present) (Pierson, 1959). In the early years, business schools were primarily in establishing a position within the college or university setting, and many were initially Schools of Commerce with primarily a trade-school orientation. As already noted, a seminal event occurred in the 1950s with the studies commissioned by the Carnegie and Ford foundations on business school education (Schlossman, Sedlak, & Wechsler, 1998). The most important research and curricular outcomes from these studies was the increased emphasis on quantitative techniques. Concerned with the apparent imbalance between advances in mathematics and those in the behavioral sciences, both studies emphasized a change in the academic model from the trade-school approach to a more rigorous academic discipline. As part of the quest for academic legitimacy, the management field has placed a significant emphasis on a discipline-based model for the training and promotion of faculty, with the primary mechanism being contributions to academic journals (Agarwal & Hoetker, 2007). While this has enabled the fields of management and organization science to achieve academic legitimacy, there is a concern that such considerations have overlooked the need for research to impact managerial practice (McGrath, 2007).

At the same time, other approaches toward the study of organizations were developing from a qualitative perspective. Whyte's Organization Man (Whyte, 1956), and the Concept of the Corporation (Drucker, 1945) provided insights into the complex world of organizations. As the organization sciences developed, others working form a more qualitative framework provided insights into the interpersonal nature of organizations and managerial life, a process that continues to the present day (Kleiner, 2008). Such approaches cover a range of methods and techniques, from observation to content analyses to participant studies to the intervention work of organization development practitioners. While all such efforts provide insights on organizations, such methods do not provide the empirical rigor of the quantitative approach.

Quantitative, Qualitative, and Mixed Methods

By far the dominant debate over the years has been the contrast between the quantitative and qualitative approaches to the study of organizations. While there are numerous distinctions between the two approaches, some of the more significant are as follows (Bryman, 2004; Cassell, 2004; Cavana, Delahaye, & Sekeran, 2001):

1. Qualitative methods seek to provide a complete, detailed description of the phenomena under investigation; quantitative approaches aim to classify features, count these, and construct statistical models to explain what is observed.
2. In many qualitative studies, the research may know only roughly in advance what she/he is looking for; quantitative methods involve clear hypotheses and delineation of the issue under investigation.
3. The research design emerges as the study unfolds in qualitative research efforts; while in the quantitative approach, all aspects of the study are carefully designed before data is collected.
4. In qualitative research the researcher is the data gathering instrument, while in quantitative research, the researcher uses tools, such as questionnaires or equipment to collect numerical data.
5. Qualitative research data is in the form of words, pictures, or objects; conversely, quantitative data is in the form of numbers and statistics.
6. Qualitative studies involve subjective analysis, as the individuals' interpretation of events is important; quantitative research uses objective means to analyze data, seeking precise measurement and analysis of target concepts.

7. Qualitative data is more "rich", time consuming, and less able to be generalized; quantitative data is more efficient and able to test hypotheses, but may miss contextual detail.
8. The research in a qualitative investigation tends to become subjectively immersed in the subject matter; the quantitative researcher tends to remain objectively separated from the subject matter.

These (and several other) differences have long been the source of debate in academia, particularly in the social sciences, as these lead to a classic confrontation between competing paradigms in research (Kuhn, 1962). Unfortunately, focusing on this debate frames these two methods in opposition to one another. While each has strengths and benefits, as well as weaknesses and limitations,, it is important to focus on how these can be integrated as in mixed methods research (Sale, Lohlfeld, & Brazil, 2002; Tashakkori, 1998). There is likely greater benefit from social science researchers developing skills in both techniques rather than to debate which of these is superior.

Action Science

While both qualitative and quantitative approaches are useful for scientific inquiry and investigation - and both have a place within the business school - another approach that has been developed is called Action Science. Developed primarily by Argyris (1995), the concept begins with the study of how human beings design their actions in difficult situations. Human actions are designed to achieve intended consequences and are governed by a set of environmental variables. How those governing variables are treated in designing actions are the key differences between single loop and double loop learning. When actions are designed to achieve the intended consequences and to suppress conflict about the governing variables, a single lop learning cycle usually is used. However, when actions are taken not only to achieve the intended consequences but to openly consider and possibly transform the governing variables, both single and double loop learning cycles are employed. (Argyris, 1995; Argyris, Putnam, & Smith, 2000)

The primary benefit of the action science approach to the study of management and organizations is the presumption that the circumstances are complex, dynamic, and uncertain, and that the goal is some action or behavioral outcome. Such methodology fits quite well within the modern business organization, as managerial situations are often difficult, involve numerous environmental variables, and require action. Practitioners in particular tend to view such approaches as useful due to the emphasis on taking action to address specific situations. Such a framework is seen as potentially transformative for the social sciences (Putnam, 1999) and for business education (Ford & Ogilvie, 1997).

Clinical Research Models

Clinical models of organization research emphasize the role of the researcher in interaction with the organization, and are often based on interventions within organization settings. In the clinical approach to research, the investigator, working with managers, individuals, or the organization, seeks to take the results of organizational experience and combine these with other similar experiences to form an understanding of the phenomena under investigation. This approach offers a more complex or 'richer" context for investigation; however, it does allow for the introduction of numerous variations which can make for difficulties in interpretation of results, and for the external validation of findings.

If properly employed, however, clinical models of research can provide insights into organizations and the practice of management that cannot be obtained in any other manner. The complexity of the situation is closer to the reality of day-to-day organization life, thus affording a more accurate and realistic view of the practice of management. In this sense, clinical research has the advantage being performed in the actual organizational setting. The question of relevance or spanning the boundary between research and practice are largely moot, as the research is being conducted within the organizational setting and within the context of organizational activity.

There has been a suggestion that the adoption of a clinical approach may lead to more effective forms of business education, as students are more exposed to the nature of managerial activity (Blaylock, McDaniel, Falk, Hollandsworth, & Kopf, 2009). Indeed, the use of clinical settings has been shown to be useful for research as well, particularly for research that seeks to explore the types of behaviors managers are likely to exhibit in various real-world organizational situations (Sautner & Weber, 2009).

Case Study Research

Business schools have longed use the case study method as a means of educating students, and certainly some - such as the Harvard Business School - have built the business educational model around the case approach. What is

less known, perhaps, is that the case approach can also be a form of business research. It is suggested that the more a research question seeks to explain some present circumstance, and the more the research question requires an in-depth and extensive treatment of some social phenomenon, the more appropriate and valuable the case study approach to research (Yin, 2009). Beyond use a pedagogical tool, case research can be used to develop new knowledge and understandings of the manner in which complex organizations and managers operate.

In fact, Christensen and Carlile (2009) have recently suggested that sound case studies can unite the development of theory with teaching. They suggest that teachers and students can be viewed as part of a collective process of building, improving, and using management theory. Further, they believe that instead of compartmentalizing teaching and research into separate categories, the use of case methodology can aid in the theory-building process by providing a structure in which it is possible to display the phenomena under investigation in all its complexity (Christensen & Carlile, 2009). This same capability has been noted by others in the management field as having application for theory-building in the organization sciences (Eisenhardt, 1989). The advantage of case study is that it does allow researchers to probe deeply into the circumstances surrounding a particular organizational issue or managerial situation. One distinct disadvantage, however, is that the uniqueness of each individual case - particular for complex organizations - can make it difficult to generalize from one case study to other organizations. However, case studies have strong appeal due to the realism and the complexity of the case under consideration, and if done in sufficient quantity, can be useful for theory development. Whether in-depth analysis of single companies (e.g.,, (Garr, 1999; Slater, 1999)) or case studies of multiple organizations (e.g., (Chandler, 1962; Collins, 2001; Peters & Waterman, 1982)), such efforts have proven over time to influence both academics and practitioners alike.

Evidence-Based Approaches

One of the more recent responses to this ongoing debate about research methodology has been a suggestion that managers adopt an approach to managerial practice that borrows from the medical profession: evidence-based management. That is, managers should adopt and embrace those practices which the overwhelming weight of the empirical evidence suggests work consistently, whether this be in financial, human resources, employee development, etc. Much as physicians are encouraged to adopt those medical practices which clinical and empirical research demonstrate to be effective, so likewise should managers and organizational professionals adopt those practices that have been "proven" to be effective (Pfeffer, & Sutton, 2006a; Pfeffer & Sutton, 2006b).

This perspective focuses on managerial practice and not on research methods per se. However, the suggestion is that managerial practice be informed by the results of empirical and clinical research in order to produce better organizational outcomes. In this sense, evidence-based management spans the boundaries between academic research and managerial practice, and offers opportunity to develop research grounded in practice, informed by theory, and guided by the rigors of sound research methodology (Rousseau, 2006). This perspective has the potential to re-frame the research process in the business school and to address the issue of research relevance in an effective manner (Rousseau & McCarthey, 2007; S. L. Rynes, Gulik, & Brown, 2007).

Table 1: Comparison of Organizational Research Methods

	Research Objective	Results	Design Process	Data Gathering	Data Format	Form of Analysis	Researcher Role
Qualitative	Complete, detailed description of phenomena	Ultimate results may be unknown	Research design emerges with the study	Researcher is the data gathering instrument	Data is in words, pictures, or objects	Subjective analysis/ Individual interpretation	Researcher is immersed in subject matter
Quantitative	Classify features, count, construct statistical models	Defined hypotheses and research issues	Research is carefully designed in advance	Researcher uses tools to gather data	Data is in numerical form	Objective analysis/ Precise measurement	Researcher is objectively removed from subject matter
Action Science	How human beings define actions	Taking action to address issues	Single- and Double- loop learning	Interactive – researcher and subjects	Data is narrative and numerical	Subjective analysis/ Practitioner defined	Researcher is involved with subject matter
Clinical	Interactively develop understanding of the phenomena	Intervention; address defined organizational issue	Interactive; researcher working with subjects	Interactive – researcher and subjects	Data is complex; includes experience, words, and numbers	Subjective; defined by researcher and subjects	Researcher interacts with subject matter
Case Study	In-depth, extensive treatment of social phenomena	Case Description and Evaluation	Historical/ Interview narrative format	Researcher as historian; may use tools and experience	Data is narrative, descriptive, objects	Subjective; based on selection by the researcher	Researcher gathers, selects and interprets subject matter

To summarize this discussion we present the key elements of the various approaches to conducting organizational research in a comparison table, Table 1 above. This table presents the five major forms of organizational research and compares these over several dimensions of research activity: (1) the research objective, (2) the intended results from the research, (3) the research design process, (4) the data gathering process used, (5) the format of the data, (6) the type of analysis performed, and (7) the role of the researcher in the research. As noted in the preceding discussion, the various forms have different advantages and disadvantages. The nature of the organizational problem and the goal of the research help define the approach that may be used.

Regardless of the research methodology employed, the issue remains how to improve the quality of organizational research. Unfortunately, methodology does not guarantee the quality of the research. It is possible for a researcher to employ rigorous methodology and intensive effort and still produce research that is of negligible value to the field. Following a research process does not insure the quality of the outcome. It is akin to employing ISO certification processes; ISO certification process certify that the process used to develop a product or service are documented, under control, and repeatable; but do not determine whether or not the product or service is of any value. It has been observed that it is theoretically possible, using ISO methodology, to have an ISO certified concrete lifejacket. Likewise, we would observe that much organizational research is methodologically sound but of limited utility and therefore does not meet the ultimate test of quality research - does the research matter to the field?

Return on Research

This question of research relevance caused us to consider the impact (or the lack thereof) of much of the academic research in business. While there has been an increase in the number of outlets, and an increase in the volume of research being produced and published, we asked ourselves, "what is the real or true benefit of this research activity?" We found very little writing that addressed this issue. Much of the existing work has been to simply question the relevance of the work done in the field or organization and management study (Hambrick, 1994; Podolny, 2009). However, no research could be found that addressed the gains of benefits to the field from academic research efforts. We therefore "borrowed" from the business disciplines and would like to suggest a concept for discussion: Return on Research, or ROR. That is, what is the net gain or benefit from research activity? What is the total grain produced from published research? We suggest that these returns take one of three forms:

Academic Return on Research. Academic ROR is the type of return most often discussed in the literature. Academic ROR are the returns to the academic field from the research activity. Such returns take the form research activity that advances the body of knowledge of the topic, discipline, or field. Academic ROR occurs when research informs further theoretical development or research activity. "Seminal" books and articles that advance theory, develop new constructs, create new measures of existing constructs, or suggest new avenues for future exploration are examples of academic research with a high ROR. Some potential measures of Academic ROR might include citations in other scholarly works and ratings of the quality of research journals.

Pedagogical Return on Research. Pedagogical ROR is research that informs the teaching practice of the academy. Such research is useful for instruction, training, and development. The returns primarily generated from this type of research are the educated students that proceed from academic programs of business study. Examples of such Pedagogical ROR methods would take the form of case studies, textbooks, teaching guides, and curricular materials. Such research furthers the educational mission of the academy and provides returns in the knowledge imparted to students. Potential measures of Pedagogical ROR would include assurance of learning programs that measure students' gains in knowledge throughout a program of study as well as testing and other academic performance measures.

Professional Returns on Research. Professional ROR occurs through the dissemination of academic research that informs business practice. As a profession, business relies upon practice to differentiate from general arts and sciences. Research that contributes to practice by enabling professional managers to do a better job managing organizations represents the primary outcome of Professional ROR. Such contributions as articles in professional journals and professional or "trade" publications, along with trade books and case studies or histories of managerial behaviors and organization activities would be examples of Professional ROR. Measures of such returns might include managers' self-reports of the publications read, sales records for business trade books, and similar information about managers' familiarity with and use of such information.

Return on Research Observations. What we see from this admittedly brief description of the concept of ROR is that much of the academic research may have a high Academic ROR and have very little pedagogically or

professionally. Herein lies the issue of research relevance; for while academics might question the value of textbooks, trade books, and articles in professional publications, such outlets often have a high Pedagogical or Professional ROR. For example, there are certain textbooks that are widely adopted and are leaders in the teaching discipline, and which impact thousands of students annually in developing knowledge about the field of business and management. These texts have a high Pedagogical ROR and may have a great influence on students, yet are perceived too often have little value academically for tenure and promotion decisions. Likewise, many trade books and publications are viewed as having little academic significance or research rigor, such as Built to Last (Collins & Porras, 1994) or Good to Great (Collins, 2001); yet these books are widely read by practicing managers and have great influence on managerial behaviors and decision making. However, such books are often lightly regarded by academics as having little theoretical rigor or appropriate research methodologies. It is possible that the field of organization studies has been too narrowly defining the ROR in terms of only Academic returns, when other returns (to students and practitioners) are of real value to the managerial discipline. However, this still begs the question, why does so much business research have low overall returns?

Improving the Quality of Business Research

This review of the approaches to conducting organization and managerial research does point out the richness of the field. Management scholarship has been successful in incorporating diverse research methods into a body of knowledge that has provided a rich tapestry of information. While criticisms that much of the work is done in the "ivory tower," social scientists management scholars recognize the need to meet the rigors of quality in conducting their investigations. At the same time, as members of a profession, there is a realization that the research must inform the practice of management to realize true value (Bazerman, 2005).

Why then does so much organizational research have very limited utility? The quest for relevant research is no less important today than in 1994 when Hambrick challenged the profession to increase the relevance of research and increase the impact of research on the managerial profession. Yet despite the overwhelming volume of research and papers being produced by business academics today, there is seemingly little change in the influence of that research on organizations and managers. There is no shortage of good, reasonable recommendations for doing so, e.g., (Latham, 2007; D. M. Rousseau, 2007). The field may be building up toward a crucial point at which these dual stakeholders will merge and recognize the value that each can offer to the field of organizational science (Rynes, 2007).

We would like to make a modest suggestion for management scholars and practitioners to consider: perhaps the reason that much research is of limited value is because it is based on the wrong questions. Practitioners have long known that the question that one asks, and the manner in which one asks it, can significantly influence the answer or result. For instance, if I ask a child "did you break the glass?" in a threatening tone I will get a very different response that if I ask the same child "who broke the glass?" or "how did the glass get broken?", and the interaction that follows will be greatly determined by the nature of the question. Likewise managers realize that there is a significant difference between asking "Why are our quality measures so low?" and asking "How can we improve the quality of our products or services?"

The question frames the answer - it establishes criteria for resolution, boundaries for inquiry, and the scope of the problem. It seems to us that one reason that so much organization research suffers from limited value is that the questions that are under investigation are limited, weak, or not very interesting to the field. Thus we contend that great research is a by-product of great questions. Once the right question is established, persons trained in research and scholarship can devote significant amounts of time, energy, and resources to developing answers to these questions. Most students who graduate with PhD degrees are capable of doing scientific research. Unfortunately, the tenure and promotion process - which tends to emphasize counting publications rather than the quality of those publications - drives many in academia to pursuing minor iterations of extant research questions with very little thought to the overall value of the research on the discipline. And there is very little in the PhD education process that enables students to learn how to ask interesting research questions; most are simply consumed with a question that will enable them to complete their dissertation and earn their degrees.

The end result is a plethora of trite, insignificant, and narrowly focused research that, while of interest to a small body of scholars and perhaps a few practitioners in the discipline, has very little impact on the overall advancement of the body of knowledge regarding organizations and the practice of management. When faced with such outcomes, one response is to look for structural explanations - hence the call for increased relevance and for processes that merge academics and practitioners. However, structural changes will not lead to meaningful research if there is no consideration of the research question. Our experience in reviewing the works of colleagues in the field for

professional meetings or various journals has led to the inescapable conclusion that much of what is submitted lacks a clear research question or is based on a research question that is, frankly, uninteresting.

But what makes for interesting research questions? Bartunek, Rynes, and Ireland (2006) performed survey research of academics and practitioners found that academics found research to be interesting if (in descending order) it (1) challenged existing theory in a counterintuitive manner; (2) was of high quality in theory development or in technical presentation; (3) was well written; (4) provided new theory of findings; (5) had practical implications; and (6) had a measurable impact on the field, either in terms of citations or ability to stimulate new research (Bartunek, Rynes, & Ireland, 2006). This provides some insight on academics' perceived characteristics of interesting research, but does not afford much insight into how one might go about developing research questions that would be of interest.

Interesting theories are those which deny certain assumptions about their audience, while non-interesting theories are those which affirm certain assumptions of their audience (Davis, 1971). To develop such theories, a good research question challenges researchers to see matters from a new perspective and see something new (Lipowski, 2008). Proposed research must meet important professional and societal goals, yet be answerable within existing resources and a reasonable time frame. Three steps have been posited for formulating a great research question (Lipowski, 2008): (1) ask interesting questions, (2) select the best question for research, and (3) transform the research question into a testable hypothesis. These are certainly valid guidelines. But how researchers might systematically explore an area of research and develop interesting research questions is not addressed.

This has led us to inquire into methods for improving the quality of research questions; that is how, might researchers go about the process of identifying issues for investigation that are significant, meaningful, and would have a real effect upon both the body of academic knowledge as well as the practice of management? Voss (2003) offered some ideas for how this might be done. He suggested that incremental innovations in research (which reinforce existing core concepts and the linkages between those concepts) are less interesting (and less likely to get published); likewise, radical innovations in research (which introduce new conceptualizations and changes in constructs and relationships among constructs) are rare and difficult to implement, and rarely get published. The two types of research most likely to be viewed as interesting (and most likely to be published) are either modular innovations (which define, measure, or analyze core constructs in new ways) or architectural innovations (which examine new situations for focal relationships, or new constructs that may affect focal relationships) (Voss, 2003).

It is in these latter categories of modular or architectural innovations that we wish to focus our attention, since research that does not get published - no matter how interesting the question - cannot influence academic research and theory development, organizational knowledge, or managerial practice. We were curious as to whether or not there were any existing approaches that might assist researchers in developing great research questions that would lead to great research. However, there is a remarkable paucity of writing and thought, and very few practical suggestions, as to how researchers might go about developing high quality research questions. We were particularly interested in a process or systematic approach. Finding very little in the available resources, we turned to another approach that has been found to be effective in generating useful research questions from existing research, a technique called Spectrum Analysis.

The Spectrum Analysis

In order to become empowered to find answers to management and organizational problems, researchers and practitioners must begin with the right questions. Science promises the revelation of a vast amount of information, and developing interesting questions is essential to scientific discovery (Voss, 2003). The best research questions are interesting, fit the research well, can be transformed in testable hypotheses, and involve some concept related to theory or an applied context (Bradley, 2001; Lipowski, 2008). As we have noted, it is the questions that determine research design, conceptual framework, and the methods utilized (Blaikie, 2000; Bryman, 2004; Flick, 1998; Lipowski, 2008; Mason, 2002; Sackett & Wennberg, 1997).

One of the benefits of non-quantitative research (qualitative methods, case study research, and action science research) is the ability of such research to discover questions and generate hypotheses that can be tested using quantitative measures (Bernard, 2000; Bryman, 2004; Cassell, 2004). Unlike quantitative methods, techniques, and tools, which emphasize numerical data, statistical analyses, and tools such as scatterplots, graphs, and histograms, qualitative studies generally use descriptive data that may not be immediately revealing. This, however, creates difficulties in generating research questions, as potentially interesting patterns or observations may not be immediately observable to the researcher or manager. As a result, many research issues may go unexplored.

While qualitative methods do possess appropriate rigor, the nature of the assessment and evaluation - relying on the insights and knowledge of the investigator - can make it difficult to identify additional research opportunities,

and to find interesting questions for future research. Hence while many qualitative studies are enlightening and pathbreaking, and may become popular best-selling managerial books such as In Search of Excellence (Peters & Waterman, 1982) or Good to Great (Collins, 2001), such works rarely lead to meaningful follow-on research or develop a systematic, empirical body of knowledge that is of much use to the field of management research.

While quantitative data gathered from organizations is analyzed and shared using statistical and related quantitative techniques, qualitative data is often neglected for want of an effective means to analyze such data and to share such data. Researchers and mangers know that this data is valuable, but lack the ability to organize the data and glean from the data important, useful, and interesting research questions. Tools currently available to analyze and present qualitative information, e.g., database sets, narratives, categorical tables, etc. fall far short of matching the analytical power, familiarity, and ease of sharing of traditional quantitative tools such as statistical analyses and numerical graphs.

Thus we perceive a gap in existing research techniques, primarily between quantitative empirical studies and qualitative. Each has its defenders and detractors. We would like to suggest that there may be a productive middle ground that might enable the field to grow and develop by leading to new avenues of inquiry and the development of interesting research questions. This middle ground lies in the use of systematic analytic techniques and methodologies on research that is qualitative in nature. By framing qualitative research in novel ways, and by doing so in a systematic and repeatable manner, it may be possible to develop new research questions that lead to productive streams of activity and that provide significant returns to the field.

One technique that might be useful for analyzing such qualitative data and generating questions that may be of use for future research is the Spectrum analysis (Slone, 2005). The goal of Spectrum analysis is to make data available to a wide audience of qualitative analysts just as histograms, graphs, and scatterplots are available for use by quantitative researchers. Through pattern recognition, a Spectrum can facilitate analysis by helping researchers share results more efficiently and by supporting inferential interpretations.

The Spectrum presents a visual analysis of qualitative data. Key qualities or characteristics of the company or data under investigation are identified and categorized. Within each category, data units are organized on the basis of similarity to others in the same category. Thus the Spectrum provides a systematic way of comparing qualitative data. Spectrum has been used to examine the relationship between mental models, motivation, and search habits of Internet users (Slone, 2002), the association between age group and Internet search goals and experience (Slone, 2007), and categorical differences in the ways end-users searched the Internet and an online library catalog (Slone, 2005).

In performing a Spectrum analysis, data or information from qualitative studies are taken as presented by the original researcher and organized according to the researcher's framework. Thus characteristics of organizations, individuals, or categories of information are used as initially conceptualized by the investigator. Within these categories of data, the information can be organized according to the original researchers' intentions and then presented in a visual manner that allows for comparisons, analysis, and development of potential research questions.

An Example: A Spectrum Analysis of Built to Last Companies

To highlight and demonstrate the potential utility of the Spectrum analysis as a tool for organization researchers, a Spectrum analysis was performed on the qualitative data from the best-selling business book Built to Last (Collins & Porras, 1994). There is evidence that this work has had a significant influence on organizations and the practice of management. For example, authors have pointed to this work to clarify the notion of extended high performance for industries (Foster & Kaplan, 2001); to discourage emulating visionary companies without understanding these organizations (Reingold & Underwood, 2004); to support disciplined growth rather than revolutionary breakthroughs (Rooney, 2006); and to promote the development of core values (Gruys, Stewart, Goodstein, Bing, & Wicks, 2008).

Using surveys and historical data, Collins and Porras (1994) identified 18 "visionary" companies based on characteristics that helped these companies succeed over decades and compared each of these to a durable but less successful competitor firm in the same industry. Visionary companies were defined as "premier institutions – the crown jewels - in their industries, wide admired by their peers and have a long track record of making a significant impact on the world around them" (Collins, & Porras, 1994, p. 1). While these firms were not free of problems, the visionary companies were resilient in the face of problems and had managed to survive and prosper over an extended period of time. The goals of their qualitative study were to identify characteristics common to highly visionary companies and use these qualities and characteristics to influence managerial practice

From surveys of chief executive officers (CEOs) from leading companies in different industries and locations, the Collins and Porras (1994) developed a list of visionary companies, identified the 20 most commonly mentioned by

the CEOs, and eliminated companied founded after 1950. They then developed a control set of matching companies from the same founding era and industry that were good companies but garnered fewer points from the CEO assessment than the visionary company. After identifying the 2 groups, the authors conducted an in-depth historical analysis of the firms. The final analysis focused on data related to organizational structure, social/cultural practices and norms, physical setting, technology, leadership, products and services, vision/core values, finances, and the external environment. The authors then narrowed the information down to a set of narratives and tables to describe distinguishing characteristics of visionary companies. The results were then presented in tabular form, each table corresponding to one of the six characteristics of success. The data from those tables has been distilled using the Spectrum analysis into one display, shown in Figure 1 below.

Figure 1: Spectrum Display of Results from Built to Last
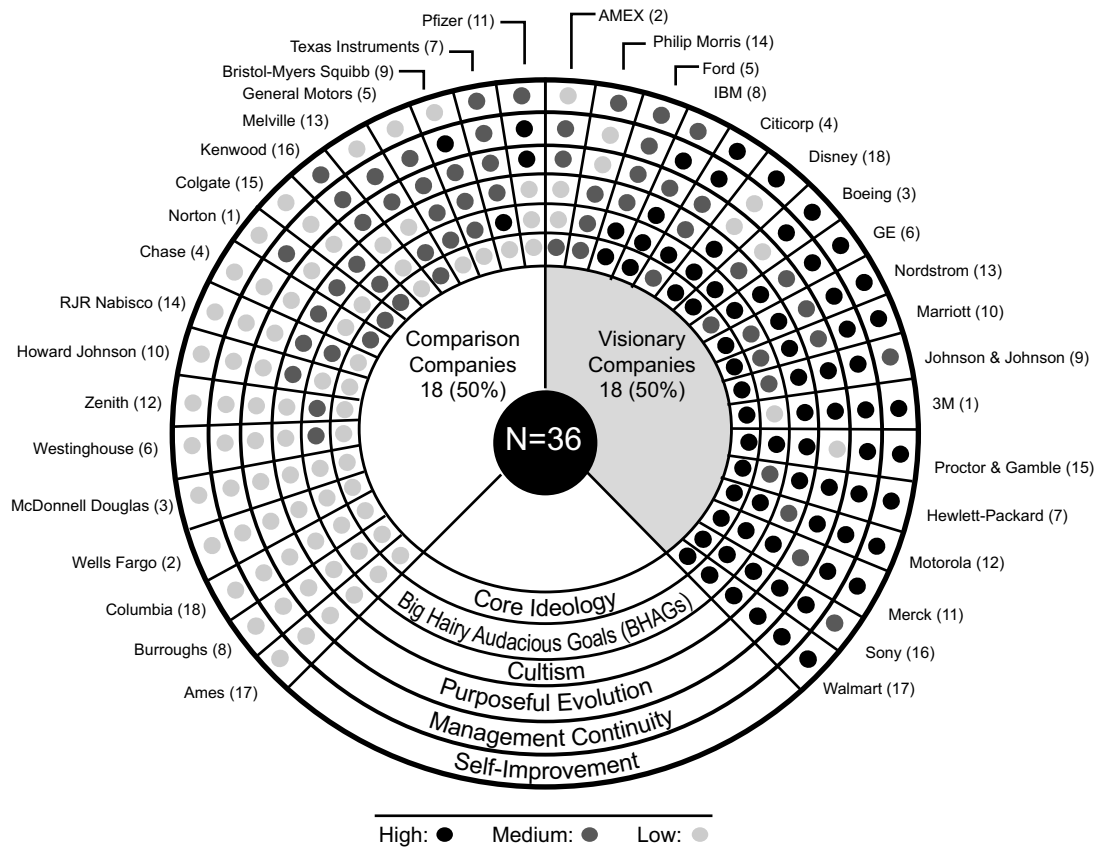
In this display, the nucleus (the black circle in the center of the Spectrum) displays the total number of cases or companies (n = 36). The larger semi-circle above the nucleus represents company type (Visionary or Comparison company). Concentric outer semi-circles include symbols, in the form of "bullet points," that represent ratings of the companies on the various characteristics. Labels identify these characteristics, which include Core Ideology - the principles that drive a company beyond profits; Bif Hairy Audacious Goals (BHAGs) - daredevil-like goals that are in line with a company's core ideology and within the realm of possibility; Cultism - a cult-like commitment to the company and the core ideology; Purposeful Evolution - the process of evolving and trying new things as the company expands; Management Continuity - filling top management positions from inside the company; and Self-Improvement - the quest to do better today than yesterday.

The names of the companies are listed for each row of visual data, and the numbers in parentheses represent the match between the visionary company and the comparison company. Companies rated the highest in each category are shown with the dark black bullets; dark gray bullets mark the mid-range companies; and the light gray bullets the lowest ranked companies. Visionary companies are ranked high (Wal-Mart) to low (American Express, or AMEX) based on the number and location of bullets form the CEO and authors' ratings. Comparison companies are similarly

ranked (Pfizer to Ames). The initial impression from the data confirms the findings of Collins and Porras that the visionary companies perform better in key qualitative characteristics than do the comparison companies.

More significantly, however, the Spectrum displays present new questions. Why does the retail discount industry contain both the highest-rated company over time (Wal-Mart) and the lowest (Ames)? Does the location of Ford and General Motors at the top of the display suggest there is less qualitative difference between high and low performing firms in the auto industry than in other industries? Do high ratings on Core Ideology and BHAGs distinguish high performing companies in the auto industry from low performing companies? Does the fact the Merck is one of the most successful visionary companies and that its match, Pfizer, is the best of the comparison companies mean that companies in the pharmaceutical industry perform better overall than those in other industries? Why do more companies rank highly on Management Continuity than on any other characteristic? What is the significance of the fact that both the companies in the credit card industry (AMEX and Wells-Fargo) have low Self-Improvement ratings? These types of questions open doors to further inquiry, and can form the basis for new streams of high-quality research efforts.

In addition, the use of the Spectrum analysis can lead to new avenues for thought and theory development that can enhance qualitative and quantitative research by offering insights into potential avenues for theoretical development. While generating research questions is important in improving the quality of research, and describing organizational phenomena using existing theoretical models is useful, to create a truly significant impact on business organizations requires that the theories and models be applicable. That is, theories and models cannot be merely descriptive, but to have maximum utility should be predictive as well. Relevance to practicing managers comes when the theories of organization researchers can provide insights and answers to the problems and challenges that affect people in organizations. However, for such theories to be valid, they ought to be based on meaningful research.

We find that the Spectrum analysis can provide insights to not only descriptive and analytic research, but may be able to offer avenues for theoretical exploration of information that increases the predictive value as well. For example, it has been noted that seven of the eighteen companies cited as examples of outstanding and enduring companies would not have met the authors' criteria for inclusion in the book a few years later (Reingold & Underwood, 2004). The specific firms were Sony, Merck, Motorola, Nordstrom, Boeing, Disney, and Ford. Interestingly, using the information from the Spectrum analysis, it is possible to find patterns in this list of companies that might suggest avenues for further theoretical development and exploration. All of the firms that would have fallen from the list of "Built to Last" companies were rated high by the authors with respect to Core Ideology and, with the single exception of Nordstrom's, all were rated highly for having a Big, Hairy, Audacious Goals (BHAG). Why might these patterns be significant? If we combine this information with the knowledge that there have been significant changes in the business environment between 1994 (when the book was published) and 2004 (when the observation about the seven less successful companies was made), we can ask if the presence or a strong core ideology and BHAG might prevent companies from being able to change with shifting business conditions. Perhaps a strong core ideology and lofty aspirational goals might limit the ability to adjust the firm's business model to respond to conditions. Fully half (7 of 14) and nearly two thirds (7 of 11) of the companies that were rated highest on these two dimensions would not have met the criteria for being a "Built to Last" company.

By detecting the patterns in the Spectrum analysis and combining this with other data, researchers can develop theoretical concepts that afford new opportunities for investigation, and that refine the generalizations that tend to characterize many qualitative studies. In the case of "Built to Last," using the Spectrum analysis might suggest that it is not enough for a company to have a "core ideology" and to focus on "BHAGs," as strong internal emphases might prevent a company from being able to adapt and modify as needed to meet business conditions. Perhaps a strong core ideology and BHAG is useful only if the firm is in a stable industry or market. In times of turbulence, such forces might prevent firms from having the requisite flexibility for change.

Note that this process extends the qualitative assessment of "Built to Last" and adds new theoretical constructs to the framework. It is this type of analysis that can extend existing research techniques and models, create new avenues for exploration, provide prescriptive benefits to managers, and increase the relevance of research - thereby improving the quality of qualitative research.

CONCLUSION

Data about corporations is gathered continuously. Some of the data, such as financial reports, market share information, and the like provides an independent, relatively objective set of numerical data that is well suited to the types of quantitative methods and analyses that are the basis for much organization research. Additional data, in the form of surveys and in-house studies, provides further data for quantitative research methodology. Such data and

methods are useful for understanding organization issues, problems, and managerial behaviors, and will certainly continue to form the base for much future knowledge generation.

However, there are much more data available regarding organizations and the practice of management that do not fit well into traditional quantitative approaches to research, nor into qualitative or mixed-methods studies. This information is useful, meaningful, and potentially valuable to managers and organization researchers. However, without some means to organize and assess such data, we are often left with broad prescriptive themes or platitudes regarding the practice of management. For the discipline to continue to grow and develop, new ways must be found to take such information and develop meaningful, interesting, and useful questions that can form the basis for continuous research - both quantitative and qualitative. In this paper, we have demonstrated one such tool, the Spectrum analysis. We believe that by pursuing such techniques organization scientists and management researcher will be better able to identify those critical research questions that form the basis for great research - research that impacts theory as well as practice, that is useful for future research as well as for increasing individuals' and firms' performance. We are encouraged by these preliminary results of inquiry and urge others to employ such techniques to improve our understanding of organizations and management.

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Aaron Buchko is a professor of management at Bradley University. He received his Ph.D. in management from Michigan State University. His research interests include knowledge management, institutional theory, and business ethics. He has published in Advances in Strategic Management, the Academy of Management Journal, the Journal of Business Research, the Journal of Business Ethics Education, Management, and several others.

Kathleen Buchko is an associate professor of counseling at Bradley University. She received her Ph.D. from Michigan State University. Her current research interests include spirituality and counseling, and exercise and sport psychology. She has published in the Journal of Business Ethics Education, Sport Psychologist, Journal of College Student, and others.