

Intellectual Structure of Research in Organizational Behavior, 1972–1984: A Cocitation Analysis*

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Introduction

Within all academic disciplines, researchers typically cluster into informal networks or "invisible colleges" that focus on common questions in common ways (Burt, 1977; Price, 1963). Within these networks, one scholar's concepts and results may be picked up by another, to be extended, tested, and refined. Through this process, one person's work builds on that of another. The history of the exchanges between members of these networks, revealed in patterns of citations, describes the intellectual history of the field. When one scholar cites the prior work of another, citations provide a means of documenting this history.

Researchers can benefit by understanding these processes and their outcomes because they both reveal the evolution of thought in a discipline and provide a sense of the future. Understanding the intellectual roots of a field also identifies the basic intellectual commitments that serve as the foundations of that field as it matures. Additionally, publication and citation practices provide an empirical basis for understanding and transmitting the norms in a field. As an area of research matures, theories are continually advanced, competing until paradigms emerge.

The purpose of this study is to document through citation analysis the intellectual development of research on organizations. Using citations which appeared in published research from 1972 to 1984 (from the *Social Sciences Citation Index*), the study identifies the subspecialties that constitute the foundations of current research.

Background

Research on organizations is conducted across a number of fields, such as organizational psychology, organizational

behavior, systems theory, organization theory, and organizational sociology. These view organizations from different yet compatible perspectives. This article focuses on two of them: organizational behavior and organization theory. Organizational behavior represents a psychological or "micro" approach as it focuses on problems and issues of individuals and groups within organizations. Organization theory represents a sociological or "macro" approach that focuses on the problems and issues related to the organization as a whole (Daft & Steers, 1986). For simplicity, the term "OB" will be used here to refer to both approaches.

Through its journals and annual conferences, the Academy of Management provides an important forum for its members to disseminate their research on organizations to their colleagues. The 50th anniversary of the Academy of Management in 1986 provided an appropriate occasion for a retrospective analysis of the intellectual development of research on OB. A number of prior studies have examined the relationship of OB to its sister disciplines, or have attempted to develop frameworks which describe the structure of the field. Lodahl and Gordon (1972) investigated the level of paradigm development in various academic disciplines, based on the degree of consensus regarding course content and degree requirements, teaching and advising responsibilities, and practices regarding collaborative research. High paradigm fields (hard sciences) exhibited greater consensus than low paradigm fields (social sciences). Subsequently, Pfeffer et al. (1977) extended these results and found that journal policies in low paradigm fields were characterized by higher degrees of particularism. Blackburn and Mitchell (1981) used citations in seven organizational science journals to measure communication among the various journals and found greater knowledge-sharing within disciplines than across them. Daft (1980) analyzed articles published 1959 to 1979 in *Administrative Science Quarterly*, classifying them by complexity of organizational models and variety of language used to convey observations about organizations. He noted a sharp trend

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toward the use of low-variety, statistical languages, which he attributed to the formal definition and measurement of simple, quantifiable relationships about organizations.

These and other prior studies (Astley & Van de Ven, 1983; Pfeffer, 1982; Quinn & Rohrbaugh, 1983) play an important role in helping us to understand the intellectual structure of OB and its relationship to other academic disciplines. What is still lacking is an empirical assessment of the key ideas and structure that underlie organizational research. While most scholars have an intuitive sense of this structure, there has been no attempt to identify "invisible colleges" based on the concepts or ideas represented by published OB research. This study represents a preliminary attempt to identify the intellectual subfields that characterize OB on the basis of constituent authors.

Methodology

This study uses cocitation analysis, a form of bibliometrics (Pritchard, 1969) or quantitative bibliographic analysis. Bibliometrics often involves counting citations to publications in a body of literature, and using these counts to develop statistical distributions. The utility of bibliometrics as a research methodology is predicated on the assumption that bibliographic citations are an acceptable surrogate for the actual influence of various information sources on an area of research. In fact, much that is read is not cited, and citation behavior can be biased by the accessibility or nonaccessibility of a particular item. Nonetheless, citations are a measure of scholarly dependence upon previous work. As a form of measurement, bibliometrics is attractive because it is objective and unobtrusive (Garfield, 1979).

The specific methodology employed by this study, author cocitation analysis, is described in detail in White & Griffith (1981). Cocitation analysis is a form of document-coupling which measures the number of documents that have cited any given pair of documents (Small, 1973; Garfield, 1979). The cocitation of authors results when a researcher cites a work of any author with the work of any other author in footnotes or endnotes. Authors whose works are *repeatedly* cited together in subsequent publications are seen as related. Such authors tend to cluster together when mapped, while authors who are rarely or never cited together do not. It should be emphasized that this positioning is based on the composite judgment of hundreds of citers, rather than judgment of a small group of experts. It is, therefore, "the field's view" of itself (White & Griffith, 1981). Cocitation analyses are dynamic over time as cocitation counts *change* with shifts in the focus of research efforts in a field.

Cocitation analysis has the potential to yield two insights for organizational behavior. First, prior work has indicated that the clusters formed by "this particular type of citation analysis . . . provide(s) a usefully accurate picture of the intellectual nature of the specialty, the rate and direction of its evolution, and the number and identity of its key people" (Garfield, 1979, p. 134). Second, cocitation

analysis may be used to document the development of paradigms. Where a paradigm exists, ideological consensus should also be found, as documented by widespread citation to the key theoretical works underlying the paradigm (Small, 1980). Further, changes in cocitation patterns over time may be used to document the scientific revolution that precedes the emergence of a new paradigm.

This study identifies the subfields of OB research, as represented by the authors that constitute them. Its unit of analysis is sets of documents associated with the names of 52 OB researchers (as sole or first authors), and it is based on their joint citation counts during 1972–1984. "Author" here refers to a body of writings by a person, not to the individual. Thus, names such as "C. Argyris" are used as surrogates for ideas, since citation of an individual is, in reality, citation of the ideas in the individual's publications (Small, 1978).

Method

Data were collected from Social Scisearch, the *Social Sciences Citation Index (SSCI)* online. The *SSCI* includes citations published in over 4,000 refereed journals. Unlike some prior studies, data here were not drawn from a sample of journals chosen by the researchers. Instead, the entire *SSCI* database served as the universe for conducting the cocitation analysis, which was thus not limited to the management literature.

The sample of authors used in the study was developed from (1) a list of leading organizational behavior scholars drawn from a survey of heads of OB/Management Departments in leading universities; (2) the list of scholars being used to compile a history of OB for the Academy of Management; and (3) a check of faculty rosters at the 20 leading OB departments. Subsequently, the primary list of names was reviewed by three additional organizational behavior faculty, who were briefed on the purpose and methodology of the study, and who subsequently suggested additions and deletions. The final list is shown in Table 1.

This list of individuals clearly does not exhaust those currently active in the field. Some "younger" researchers who have published after the late 1970s are not included, since, due to publication lags, a number of years are required for their articles to be cited. However, the ideas represented by their work should be reflected in this study through their cocitation of the individuals in Table 1. Given the preliminary nature of this study, we nonetheless believe that the pool of ideas associated with the authors in Table 1 represents the field of organizational behavior.

Each of the 52 authors paired with every other author in Table 1, and the cocitation frequency of each pair was computed from Social Scisearch. For example, searching for cocitations to Alderfer and Aldrich would yield the number of journal articles in the database that cited at least one work by Alderfer and at least one work by Aldrich. The result of this procedure was a 52 by 52 matrix of cocitation counts. The diagonals were computed by taking the three highest intersections for each author and dividing by

Development/Humanistic tradition, factor 4 research on leadership, and factor 5 a social-psychological approach to organizations, including information use and commitment (Salancik, Roberts, and O'Reilly). Factor 6 represents research on careers, socialization, and commitment. Factor 7, as stated previously, represents research on strategy. Factor 8 appears to represent a revisionist approach to OB. This research includes Simon's theory of bounded rationality and Staw's research on escalation commitment, both of which challenge the maximizing model of rational choice as a basis for individual decision making (Pfeffer, 1981). Interestingly, factors 8 and 3 are the only ones on which both "macro" and "micro" researchers cross-load.

Given the exploratory nature of our study and the absence of cross loadings, we used the factor loadings to partition our data into "micro" ($n = 29$) and "macro" researchers ($n = 23$). Each of these were subsequently factor analyzed using a varimax rotation.

The results for the micro authors are shown in Table 3. In general, these results are consistent with those in Table 2. Five factors resulted, accounting for 80.2% of the variance. The first factor accounts for 47.5% and represents basic micro OB with strong roots in I/O psychology. Factor 2 represents a more social psychological approach (job design, commitment, information use, etc.). Factor 3 represents OD, factor 4 leadership, and factor 5 careers and socialization. In this analysis 75% of the sample loads unambiguously on a single factor, suggesting that the research in this tradition is relatively well-structured and differentiated.

The results for the analysis of the macro authors are shown in Table 4. These differ from Table 2. Four factors

emerged, accounting for 82.5 percent of the variance. As is the case with the micro authors, the first factor represents the foundations of macro OB research and accounted for 65 percent of the variance. Factor 2 represents a strategy perspective and includes 12 authors (as opposed to three authors in factor 7 of Table 2). Factor 3 appears to capture the revisionist approach to OB since the factor is defined by Simon, March, and Weick. Factor 4 is characterized by authors exploring organization design, e.g., Lawrence, Trist, and Galbraith. Judging from the large number of cross-loadings, research in this tradition appears to be less differentiated than that in the micro tradition. Here, eight authors load on two factors, nine authors on three factors, and three authors on all four factors (Galbraith, Perrow, and Thompson). Only Hambrick, Tushman, and Trist load on a single factor.

Discussion

In the overall factor analysis (Table 2), two factors representing macro and micro foundations account for more than half of the variance. This finding is consistent with prior research, which found the natural sciences to be characterized by high paradigm development in contrast to the social sciences (Lodahl & Gordon, 1972; Pfeffer et al., 1977). This is to be expected for a field as young as organizational behavior. Further, in the overall analysis, there were very few instances of "micro" researchers loading on "macro" dimensions, or vice versa. The recent emphasis in the literature on the influence of *context* on individual behavior (e.g., Pfeffer, 1982) may be reflected by more of these cross-loadings in future studies of this type.

TABLE 3. Micro author factor loadings at .30 or higher.

	1. Foundations	2. Social Psychology	3. Organizational Development	4. Leadership	5. Careers
Schwab	.85	Salancik .83	Argyris .97	Fiedler .81	Van Maanen .79
Lawler	.84	O'Reilly .82	Likert .90	Kerr .77	Schein .63
Locke	.84	Staw .69	Bennis .89	House .76	Hall .62
Porter	.82	Roberts .63	Schein .68	Graen .73	
Vroom	.82	Steers .58	Fiedler .42	Mitchell .63	
Hackman	.77	Hackman .42		Vroom .41	
Campbell	.76	Porter .39		Campbell .40	
Hulin	.75	Cummings .33		Lawler .30	
Dunnette	.74	Slocum .32			
Alderfer	.70				
Schneider	.66				
Cummings	.65				
Mitchell	.61				
Steers	.59				
Graen	.57				
House	.54				
Slocum	.43				
O'Reilly	.33				
Roberts	.32				
<i>Eigenvalues</i>	13.76	3.59	2.91	1.55	1.41
<i>% Variance</i>	47.5	12.4	10.0	5.3	4.9

TABLE 4. Macro author factor loadings at .30 or higher.

1. Foundations		2. Strategy		3. Revisionists		4. Organizational Design	
Freeman	.77	Hambrick	.77	Simon	.84	Lawrence	.72
Aldrich	.73	Miles	.74	March	.83	Trist	.69
Blau	.73	Mintzberg	.61	Weick	.63	Galbraith	.60
Child	.73	Tushman	.59	Mintzberg	.58	Perrow	.55
Pugh	.71	Pfeffer	.57	Ouchi	.47	Thompson	.53
Pfeffer	.62	Daft	.54	Blau	.46	Pugh	.52
Perrow	.60	Van de Ven	.52	Pondy	.46	Blau	.47
Starbuck	.60	Weick	.52	Thompson	.45	Child	.45
Pondy	.59	Aldrich	.47	Galbraith	.42	Van de Ven	.38
Thompson	.56	Lawrence	.42	Daft	.40	March	.37
Ouchi	.45	Starbuck	.42	Pfeffer	.40	Miles	.36
Van de Ven	.45	Thompson	.42	Perrow	.37	Simon	.31
Lawrence	.43	Ouchi	.38	Starbuck	.35		
Daft	.41	Child	.37	Freeman	.31		
Weick	.40	Galbraith	.32				
Galbraith	.35	Perrow	.32				
March	.30	Pondy	.31				
<i>Eigenvalues</i>	14.95		1.65		1.25		1.12
<i>% Variance</i>	65.0		7.2		5.4		4.9

Within OB, research in the micro tradition is more clearly differentiated than macro. These differences may be explained in part by contextual factors. Research grounded in organizational psychology has a longer tradition in schools of business than research grounded in sociology. (The subject of organizations did not emerge as a distinct category in the index to the *American Journal of Sociology* until 1965.) Further, sociological research has tended to focus on social systems or organizations as the unit of analysis, thereby making sociological research "less proximately relevant to managerial concerns" (Pfeffer, 1982, p. 31). However, recent events such as government deregulation and the rise of foreign competition have caused "macro" issues to be more central to managers as well as researchers. As published research on such issues cumulates, one may expect macro research to evolve into a set of distinct subspecialties.

A counter-hypothesis to this expectation may also be advanced. The apparent lack of structure in macro research (compared to micro) may be attributable to the types of problems that have been the focus of each tradition. Research in the macro tradition may simply deal with messier problems, requiring more complex organizational models and greater language variety than research in the micro tradition (Pfeffer, 1982, Martin, 1982).

This study also provides some empirical support for Martin's (1982) "garbage can model," which characterizes organizational research as a "loose collection of ideas, rather than a coherent structure having a shared intellectual paradigm" (p. 22). If Martin is correct, it may be unrealistic to expect organizational research to resemble a hard science as long as the focus of our inquiry consists of complex or ill-structured phenomena.

The results from this study suggest a number of potentially fruitful avenues for future research. First, this study

did not control for time and, as a result, provides an archival perspective on the field. It is likely, then, that as the field matures and some early theories are refined or rejected, not all the ideas reflected by the individuals in Table 1 will continue to be cited. Social Scisearch allows a searcher to limit a request by date of citing publication (as opposed to date of cited publication). It would be useful to replicate this study using only citations published over the past five years, for example, to provide a more current view of the area. Individuals whose research was no longer being cited would fail to load on any of the resulting factors. It is hoped that this article will serve as a benchmark for future replications.

Second, since the authors in a cocitation analysis serve as surrogates for their ideas, it would be useful to identify which *papers* are associated with the respective factors. This information would provide a more objective basis for assigning names to factors. Because the factors in this study were interpreted solely on the basis of author loadings, the interpretations for some of the factors are rather speculative.

Finally, organizational theories may be found in a variety of published formats, including scholarly journals, monographs, and textbooks. In choosing a publication outlet, an individual is likely to be influenced by prior training, stage of career, and the norms related to advancement where he or she is employed. Further, publication policies for journals in low paradigm fields (such as OB) are influenced by decision-making processes (Pfeffer et al., 1977). It is likely, therefore, that different publication formats may portray different perspectives of the field. It would be useful to develop a sample, for example, based on the author indexes in leading textbooks in order to determine how closely the OB we teach our students resembles the field as represented by our research.

As research on organizations enters the 1990s, cocitation analysis can provide an objective basis for documenting the intellectual journeys that scholars in the field will take. It is hoped that this study will stimulate some of this future research.

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