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A FAUSTIAN BARGAIN? THE GROWTH OF MANAGEMENT AND ITS RELATIONSHIP WITH RELATED DISCIPLINES

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In an effort to respond to concerns regarding academic rigor expressed in the 1950s, management researchers turned to more established disciplines to help develop a stronger intellectual climate. We examine the evolution of management research over the past 25 years, with a focus on its relationship with the related disciplines of economics, psychology, and sociology. Using citation data for all *Academy of Management Journal* articles published between 1980 and 2005, we document the temporal changes in disciplinary interlinkages. We discuss the implications of these findings for the current and future state of our field.

The launch of the *Academy of Management Journal* in 1958 coincided with a critical era in management-related research (Porter & McKibbin, 1988: 166). Important stakeholders, including university leaders, faculty, and business executives, were coming to the conclusion that business schools had seriously underrated the importance of research. Two influential reports, one sponsored by the Ford Foundation (Gordon & Howell, 1959) and one by the Carnegie Corporation (Pierson, 1959), crystallized this concern in their criticism of management education for slack standards and low-quality faculties. The reports catalyzed two changes in business schools: an increased focus on intellectual climate, which included providing faculty more release time from teaching to undertake research, and the development of closer relations with relevant underlying disciplines. These changes still reverberate through management research today. However, just as Faust failed to consider the ultimate consequences when he advanced his quest for knowledge with an infernal bargain, it may be the case that while drawing from related disciplines, we have become too bound within each individual disciplinary perspective, resulting in a multitude of divergent perspectives and a low level of paradigm development (Pfeffer, 1993).

In this article, we examine the evolution of management research, especially its links with related

disciplines over time. In doing so, we use insights from the industry evolution literature, which addresses the changing relevance of knowledge from related industries as a focal industry evolves from inception to maturity. For our empirical analysis, we look at all articles published in *AMJ* over the last 25 years. Given *AMJ*'s status as the original journal of the largest, most diverse, professional association of management scholars, articles published in *AMJ* offer an ideal empirical context in which to examine evolutionary trends in management. This journal has played a critical role in shaping management research over its 50 years of publication, a role we believe it will continue to play in its second 50 years. Thus, this 50th anniversary is an appropriate occasion to examine *AMJ*'s role in the intellectual discourse surrounding management research.

THEORETICAL FRAMEWORK

A Brief Historical Backdrop

Research in the social sciences has a long history; economics, psychology, and sociology hail back to at least the late 18th and early 19th centuries as disciplines and bodies of scholarly thought. In contrast, management is a much younger discipline and, importantly, its inception in the late 19th century arose from a practical need for skilled business managers.¹ A rapid increase in the number of busi-

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¹ The first business school was founded in 1881 at the University of Pennsylvania, by Joseph Wharton; he thought "it would be sensible for young men to learn to do something useful in College and not merely how to conjugate Latin verbs or strum upon the mandolin" (Silk, 1964: 421).

ness schools after World War II was accompanied by growing concern about the academic rigor of their programs (Jeuck, 1986).

In one of the two influential reports published in 1959 on the state of research in business schools, Gordon and Howell minced no words when they stated, “[The] business literature is not, in general, characterized by challenging hypotheses, well developed conceptual frameworks, the use of sophisticated research techniques, penetrating analysis, the use of evidence drawn from relevant underlying disciplines—or very significant conclusions” (1959: 379). According to Porter and McKibbin (1988) and Jeuck (1986), the two reports (Gordon & Howell, 1959; Pierson, 1959) motivated business schools to give faculty more time for research and to tighten relations with the scholarly disciplines related to management. It was in this climate that the Academy of Management (founded in 1936) launched the *Journal of the Academy of Management*, later renamed the *Academy of Management Journal*. The first issue of this journal was published in 1958, significantly after the inaugurations of the *American Economic Review* (first published in 1911), the *American Journal of Sociology* (1895), and the *American Journal of Psychology* (1887).

The development of the management discipline over the last 50 years is in many ways analogous to the evolution of an industry. Thus, we look at the growth of management as a discipline over the last 50 years through an evolutionary lens. We first briefly review the industry evolution literature and then discuss trends in management research, particularly in the context of its connection to related disciplines and the subsequent impact this has had on the evolution of subfields within management.

Industry Evolution Literature: A Brief Review

Gort and Klepper (1982) discussed the diffusion of innovations as a result of temporal changes in two key types of information: information that is *within* the boundaries of a focal industry, and information that is *outside* those boundaries. A nascent industry has very little industry-specific knowledge (Gort & Klepper, 1982) and thus has a malleable institutional environment that needs legitimacy (Aldrich & Fiol, 1994; Hannan & Freeman, 1977). In such an environment, the focal industry benefits from knowledge residing in related industries. Diversifying entrants from many related industries may enter a new industry (Bayus & Agarwal, in press; Carroll, Bigelow, Seidel, & Tsai, 1996). These firms differ in both capabilities (Helfat & Lieberman, 2002; Klepper & Simons, 2000) and cognitions (Tripsas & Gavetti, 2000). Researchers

have found that the knowledge imported from related industries helps a new industry to leverage established distribution networks (Mitchell, 1991), develop new knowledge (Lane, 1989), and increase in legitimacy (Carroll et al., 1996), all of which enable it to take off and grow (Agarwal & Bayus, 2002). Not surprisingly, performance advantages accrue to diversifying entrants—firms that have established operations in related industries (Bayus & Agarwal, in press; Carroll et al., 1996; Klepper & Simons, 2000)—not only because these diversifiers help shape the new industry environment, but also because the gap between their resources and those needed for success is low (Helfat & Lieberman, 2002).

As an industry acquires legitimacy (Hannan & Carroll, 1992) and undergoes a discontinuous transformation (Agarwal, Sarkar, & Echambadi, 2002), the stock of industry-specific knowledge, rules, and routines increases (Gort & Klepper, 1982). Often a “dominant design”—an accepted standard or technology paradigm for the industry (Abernathy & Utterback, 1978)—emerges. In the more mature phases of an industry, experience outside its established boundaries (even in related industries), as well as distributional infrastructure and consumer ties, become less relevant as the industry develops its own knowledge base and institutional structure. In this latter phase, incumbent firms (Gort & Klepper, 1982) and firms that “spin out” from the incumbents (Agarwal, Echambadi, Franco, & Sarkar, 2004; Klepper, 2002) have an advantage, because their capabilities and knowledge are better suited to the industry environment than are those of diversifying entrants.

Research in Management: An Evolutionary Framework

It is not surprising, given the relative infancy of management as a discipline in the late 50s and early 60s, that related disciplines significantly affected its evolutionary path. As might be expected in view of the findings of research on industry evolution highlighted above, the early years of the field were characterized by a small knowledge stock and research judged to be intellectually substandard (Gordon & Howell, 1959; Pierson, 1959). Linking to the related disciplines more directly was an obvious way to gain legitimacy and relevant resource base, one that parallels the way early-stage industries link themselves with more mature, related industries: the legitimacy of management as a discipline would be enhanced; management could benefit from the established research techniques and academic rigor of the related disciplines; and

the entry of researchers experienced in related disciplines into management studies would infuse the new field with their learning by doing. In 1988, Porter and McKibbin documented changes in the research climates of business schools over the 25 years following the foundation reports. They remarked that by the mid 1980s, the “research agenda for most schools looked rather different than it had in the 1950s, both in amount and character” (Porter & McKibbin, 1988: 166). Importantly, Porter and McKibbin highlighted the seeding of business school faculties with members from the related source disciplines, including industrial and social psychologists, sociologists, economists, and even highly quantitatively oriented professors from departments such as engineering (Porter & McKibbin, 1988). These connections with the underlying disciplines increased the diversity of management research—which now spanned issues of economic performance, organizational behavior, managerial decision making, and more—and also enhanced the academic rigor and research climate of the field.

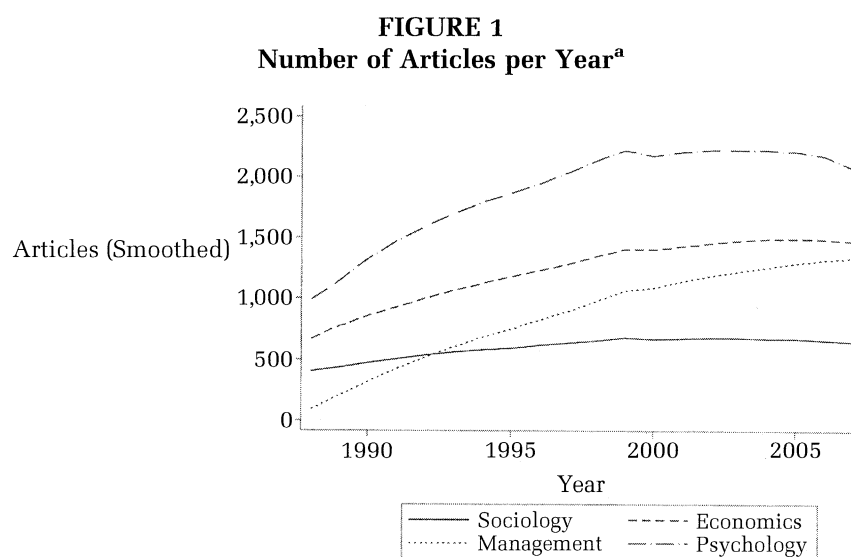
Fifty years have gone by since the influential Carnegie and Ford Foundation reports. Has management research evolved into a mature discipline? Taking the volume of research articles as analogous to industry output, in Figure 1 we document the overwhelming growth in the management discipline over the last 25 years. For journals indexed in the ISI Web of Knowledge/Social Science Citation Index, the rate of growth in management articles has been higher than the growth in economics, psychology, and sociology articles. Indeed, although there were fewer than 200 management articles annually in the Index during the late 80s, there were close to 1,500 management articles an-

nually by 2005. Starting at a level of output much lower than the outputs of economics, psychology, or sociology, management surpassed sociology in the early 90s and has come close to economics in recent years. The growth rate of management output has slowed down during the last decade, however—as is also the case in the mature stage of an evolving industry.

A more telling indicator, however, is the trend in the association of management with the academic disciplines related to it. As described above, Gort and Klepper (1982) theorized that the relative importance of knowledge from outside an industry’s boundaries decreases as the industry matures. In its initial years, management turned to related disciplines not only for “content,” or theories, but also for “method,” or intellectual rigor (Gordon & Howell, 1959; Pierson, 1959). As management matured, both forms of borrowing should have become observably less important, given the development of management-specific research and graduate training, especially Ph.D. programs. Is this conjecture supported by empirical evidence? Over time, does published management research show the maturity of the field in an increased reliance on work published in management journals and a decreased reliance on work in nonmanagement journals, as evidenced by relative proportions of citations to the two different types of journals?

RESEARCH QUESTIONS: INTERRELATIONSHIPS AMONG DISCIPLINES

We now turn to research questions about the relative impacts of the related disciplines on management and how they relate to each other within



^a Count of articles indexed in ISI Web of Science, smoothed via locally weighted scatterplot smoothing.

management. Each of the related disciplines—economics, sociology, and psychology—studies different facets of societal issues and has developed different stocks of both theory and methods. The core research questions of interest, underlying assumptions, and conceptualizations of organizations and their interactions differ dramatically in the three disciplines. Thus, each management-related discipline brings with it different cognitive frameworks and capabilities, much like the different cognitions and capabilities of diversifying entrants from related industries discussed earlier (Bayus & Agarwal, forthcoming; Klepper & Simons, 2000; Tripsas & Gavetti, 2000).

As management has evolved, how have the different related disciplines interacted with each other? Has there been simultaneous examination of common issues through multiple disciplinary lenses, or parallel tracks of thought that have developed without much interaction? Simply put, is management research a melting pot in which insights from many perspectives are combined, or is it multidisciplinary only in the sense that it comprises work influenced by different disciplines, but pursued one discipline at a time?

Before examining these questions, we note that management research has bifurcated into two broad subsets, often called “micro” and “macro” to denote the different levels of analysis on which they focus (Schminke & Mitchell, 2003). Micro research focuses on individuals and teams, and macro research focuses on organizations and extraorganizational issues (Pearce, 2003; Schminke & Mitchell, 2003). Within the Academy of Management (as representative of management scholars), micro scholars map largely onto an organizational behavior cluster and macro scholars, onto a business policy and strategy cluster (Pearce, 2003). Further, the related disciplines would be expected to differentially impact micro and macro research, given differences in both their primary levels of analysis and the phenomena they examine.² Thus, we treat the

micro and macro areas as subdisciplines within management and examine the evolution of each in the context of the influence of related disciplines.

Returning to our main question of interest, there is reason to expect, particularly in the early stages of an academic field, that differences in the capabilities and cognitive lenses of the different related disciplines—here, the source disciplines of economics, sociology, psychology—will cause thinking to follow multiple, parallel tracks. Just as inertia constrains the development of capabilities of diversifying entrants (Tripsas & Gavetti, 2000), scholars who enter management studies from given related disciplines may be constrained by inertia in the form of specializations and foci peculiar to those disciplines. Although singularity of focus may be inevitable in the initial stages of a new discipline, the “dominant design” that emerges over time need not reflect multiple competing foci or “standards.”

Indeed, one of three dominant designs for the role of related disciplines may have developed over time. One possibility is that each of the two broad subareas of management scholarship—micro and macro—has been strongly influenced by a single discipline and, thus, the citations in work published in the area would be predominantly to that discipline alone. A second possibility is that a confluence of multiple perspectives has influenced the micro (macro) area, as reflected in multiple disciplines being cited in work in the area and moreover, in multiple disciplines being cited jointly in *single articles*. A third possibility is that no single discipline has dominated either micro or macro research; although work in each area might cite multiple disciplines, they would exist in a state of tension rather than mutuality. This tension would be reflected by citations in macro (micro) work as a whole to multiple disciplines, but citation of only one discipline in any given article.

Accordingly, and to summarize, three alternative patterns may characterize the relationships of the underlying disciplines to micro (macro) research:

² Psychology, for instance, focuses more on individuals and small groups. Accordingly, one would expect psychology to have a stronger impact on the micro rather than macro areas of management research. Within management, issues related to individual personality and small group dynamics lend themselves particularly well to the strengths of psychology. Social and organizational psychologists do investigate group and team behavior, yet they do not study large collectives as a rule. On the other hand, sociology focuses on the institutional structures of society. Within management, the influence of organizational and interorganizational structures on firms’ and individuals’ decision making and perfor-

mance are, for instance, ideal for examination through a sociology lens. Accordingly, one would expect sociology’s influence to be largely in the macro areas of management research. Finally, economics could be characterized as being in the middle of the continuum. A well-developed literature in labor economics addresses micro issues related to individuals, and other well-developed literatures, in industrial organization and international trade, deal with more macro issues related to firms, industries, and countries. Thus, both individual and collective concerns lend themselves to examination via economics.

In *pattern 1*, the dominant design is based on a single related discipline, and micro (macro) management research predominantly contains citations to that discipline; in *pattern 2*, the dominant design is based on multiple disciplines, and individual micro (macro) management research articles contain citations to multiple related disciplines at the same time; and in *pattern 3*, no dominant design is present, and micro (macro) management research contains citations to multiple related disciplines, but each individual article predominantly cites only one related discipline.

METHODS

Context and Data

To examine the above research questions regarding the evolution of management research and its relationship with other disciplines, we used the body of work published in the *Academy of Management Journal (AMJ)* as a proxy for academic scholarship in the discipline. Given *AMJ*'s status as the original journal of the largest, most diverse professional association in the field of management, articles published in this outlet represent an ideal empirical context in which to examine the evolutionary trends in management research. Indeed, the journal's current "Information for Contributors" explicitly states, "Authors should make evident the contributions of specialized research to *general* management theory and practice." Additionally, articles published in *AMJ* need to have both theoretical and empirical components (Colquitt & Zapata-Phelan, 2007), and a recent study by Schminke and Mitchell (2003) found micro and macro areas of management research to be equally well represented in *AMJ*.

For our empirical analysis, we obtained citation data for all *AMJ* articles published in the period 1980–2005 from the ISI Web of Knowledge/Social Science Citation Index produced by Thomson Scientific.³ The three linked data sets used for the citation analysis included: (1) all articles published in *AMJ* from 1980 to 2005 (source articles), (2) all articles cited by these *AMJ* articles (cited articles), and (3) all articles that subsequently cited these *AMJ* articles (citing articles).

The citation analysis indicated that the 1,530 *AMJ* source articles were associated with 2,080 unique authors at 488 institutions in 31 countries. These articles included 36,441 citations to 15,173

unique articles in 848 distinct journals. The 14,065 authors of the cited articles were associated with 2,178 institutions in 72 countries. The *AMJ* source articles were subsequently cited 54,417 times in 22,234 unique articles that appeared in 1,293 distinct journals. The 21,866 authors of these articles are associated with 3,804 institutions in 92 countries.

To supplement the citation analysis with some qualitative assessments, we also conducted a survey of the 2005–06 *AMJ* editorial board. The survey instrument consisted of 23 questions, both normative and positive in nature.⁴ The survey questions were designed to elicit board members' judgments on a series of issues related to the academic discourse surrounding management research. We received 91 responses, which represented a 76 percent response rate. Respondents were broadly representative of the editorial board. The average tenure on the board was 4.2 years, with a range of from one month to 12 years. The most frequent departmental affiliation was management (59%), followed by strategy (17%) and organizational behavior (14%). The most frequent fields of doctoral study of the respondents were organizational behavior (30%), strategy (26%), psychology (18%), and industrial relations (8.5%).

Journal Categorization

Temporal changes in links to related disciplines should be reflected in the citation patterns of *AMJ* articles. Thus, we treat citations to work from journals in management (as distinct from journals in related disciplines) as reflecting the extent to which *AMJ* authors have drawn from internal versus external stocks of knowledge. To meaningfully link the citation data to disciplines related to management and to identify an *AMJ* article as either micro or macro in content, it was necessary to appropriately categorize the citing/cited journals. Categorization at the discipline level was based on the ISI's 56-category system. Most journals belong to a single category, but some were in 2 or 3. Two adjustments to ISI's categorization scheme were necessary. First, we collapsed its 10 psychology categories into a single one. Second, we modified ISI's scheme for journals related to business and/or management into three partially overlapping cate-

³ Although data for articles published from 1958 through 1979 would have enhanced our study, these are unavailable in electronic form.

⁴ We pretested the survey and then administered it to board members through the SurveyMonkey Web site to ensure control over the order in which the survey items were completed and accurate, automatic compilation of responses.

gories: “business,” “management,” and “business, finance.” This typology did not allow us to distinguish between “management,” as commonly understood to include strategy, organization theory, organization behavior/human resource management, and international business, and other fields of business (e.g., finance.). Therefore, we created two exhaustive and mutually exclusive categories, “management” and “business, not management.” Any journal categorized by ISI as “management” was placed in “management.” Journals categorized as “business” or “business, finance” that were not also categorized as “management” were placed in “business, not management.”

We further categorized the management journals as having either a general, a micro, or a macro focus, and each of us independently coded this group of 60 journals into these three areas.⁵ In 88 percent of the cases, we agreed on coding. In the seven cases of disagreement, categorization was resolved via discussion. The Appendix presents our categorization of the journals. We then used the micro/macro journal classifications to categorize the *AMJ* articles. If an article cited more work from macro journals than from micro ones, we classified it as a macro article. Similarly, if an article cited more work from micro journals than macro, it was classified as a micro article.

Analyses

To examine the evolution and interdisciplinary links of management research (as manifested in *AMJ*), we examined the cited and citing articles of individual articles. For ease of interpretation of the analysis, we represent these patterns in Figure 2. In

⁵ We conducted robustness checks of our categorization using the following procedure: Rather than classifying the journals into micro or macro directly, we classified them on the basis of their fields of study (i.e., entrepreneurship, human relations, organization behavior, strategy, etc.). We then computed correlations of the citations of these field-based journals in the *AMJ* articles. Entrepreneurship, international business, strategy, and technology had significant, positive, pairwise correlation coefficients and thus formed the macro cluster. Similarly, human resources and organization behavior had significant, positive correlations with each other and formed the micro cluster. These clusters were found to be very similar to the clusters of AOM divisions reported in Pearce (2003). Further, each of the fields in the macro cluster was negatively correlated with the fields in the micro cluster. The clusters obtained via this alternative procedure were consistent with the micro/macro categorization based on a direct inspection of the journals.

each panel, squares represent *AMJ* articles, whereas the other shapes represent the disciplines of citing or cited articles for a focal *AMJ* article. Arrows represent knowledge flow, where $A \rightarrow B$ indicates that knowledge has flowed from A to B—that is, B cites A. Panels 2a and 2b depict disciplinary groupings of articles respectively cited by and citing a focal *AMJ* article. Panel 2a shows the case in which articles cited by *AMJ* are grouped by disciplines, which appear as dark shapes. This depiction illustrates our examination of the evolutionary trends in disciplinary relationships through the modeling of disciplinary citations in *AMJ* articles as a function of chronological time. Similarly, in panel 2b, we depict the disciplines that cite a focal *AMJ* article as light shapes. In panel 2c, we depict the combined case; the dark shapes continue to depict the disciplinary affiliation of articles cited by *AMJ*, and the light shapes depict the disciplinary affiliation of articles citing *AMJ*. Panel 2d depicts the relationship between the disciplinary basis of citations in a focal *AMJ* article and the disciplinary basis of an *AMJ* article that subsequently cites it. Panels 2c and 2d allow us, in the supplementary analysis section, to examine further the dissemination of knowledge within management and across disciplines via the management literature.

RESULTS

Descriptive Statistics

Before turning to a formal analysis of our questions of interest, we provide some descriptive statistics based on our data. As noted above, management research is inherently interdisciplinary and has traditionally drawn insights from related disciplines such as psychology, sociology, and economics. Indeed, results from the editorial board survey indicated that 62 percent of the board members thought it was critical or very important that *AMJ* draw on related disciplines. Further, 59 percent of the members surveyed thought that *AMJ* accomplished this goal to a moderate degree, and 29 percent thought it did so to a high or very high degree. When asked about how important it was for *AMJ* to influence other disciplines in turn, a smaller percentage (41%) thought it was very important or critical, but fewer still (only 13%) believed that *AMJ* accomplished this goal to a high or very high degree.

The citations data seem to be consistent with the editorial board expectations and perceptions. In Table 1, we provide citation statistics for the disciplines that show links with *AMJ*, both aggregated over the 1980–2005 period and broken down into

TABLE 1
Citations by and to *AMJ* Articles^a

Discipline	1980 to 1987	1988 to 1996	1997 to 2005	Total	Change (1980–87 to 1988– 96)	Change (1988–96 to 1997– 2005)
<i>(a) Citations by AMJ</i>						
Management	2,256	6,671	9,571	18,498	196%	43%
Psychology	2,209	2,989	3,215	8,413	35	8
Sociology	388	872	1,032	2,292	125	18
Economics	206	904	1,085	2,195	339	20
Business, not management	203	531	715	1,449	162	35
Social sciences, interdisciplinary	161	364	437	962	126	20
Industrial relations & labor	128	238	211	577	86	-11
Social sciences, mathematical methods	97	171	137	405	76	-20
Law	9	89	113	211	889	27
Planning & development	27	45	105	177	67	133
Political science	37	48	41	126	30	-15
Anthropology	11	39	60	110	255	54
Communication	10	53	40	103	430	-25
<i>(b) Citations to AMJ</i>						
Management	8,584	14,575	4,559	27,718	70	-69
Psychology	5,126	6,642	1,788	13,556	30	-73
Business, not management	1,531	2,331	766	4,628	52	-67
Social sciences, interdisciplinary	892	993	225	2,110	11	-77
Industrial relations & labor	512	553	103	1,168	8	-81
Information science & library science	341	485	154	980	42	-68
Ethics	353	411	181	945	16	-56
Sociology	281	472	88	841	68	-81
Public administration	320	293	104	717	-8	-65
Economics	179	342	124	645	91	-64
Planning & development	123	205	113	441	67	-45
Communication	127	229	55	411	80	-76
Health policy & services	118	242	38	398	105	-84
Education & educational research	181	143	32	356	-21	-78
Women's studies	108	181	19	308	68	-90
Social work	123	121	21	265	-2	-83
Law	65	142	48	255	118	-66
Public, environmental & occupational health	81	124	26	231	53	-79
Nursing	144	70	16	230	-51	-77
Ergonomics	78	98	24	200	26	-76
Environmental studies	56	71	33	160	27	-54
Social issues	42	73	12	127	74	-84

^a Disciplines not listed cited *AMJ* fewer than 100 times in total. Decline in the latter period reflect the fact that there has been less time for articles to be cited.

three equal periods. Table 1a rank-orders the disciplines on the basis of aggregate citations by *AMJ* articles (panel 2a of Figure 2), and Table 1b rank-orders the disciplines on the basis of aggregate citations to *AMJ* articles (panel 2b of Figure 2).

Primary Analyses

Figure 3 tracks the proportion of citations in *AMJ* articles that were to the management literature, year by year. There has been a fairly steady increase over time, from around 40 percent in the early

1980s to just under 60 percent in recent years. Regressing the proportion of citations to the management literature against years confirms the visual impression of an annual increase of .8 percentage points per year ($p < .01$). We also examined citations of *AMJ* articles in management and nonmanagement articles. Citations of *AMJ* articles in both management and nonmanagement journals have increased over time, growing annually by an average of 27.53 and 23.34 respectively ($p < .01$ for both). Interestingly, the rate of increase does not significantly differ over these two categories ($p =$

FIGURE 2
Sample Citation Analyses

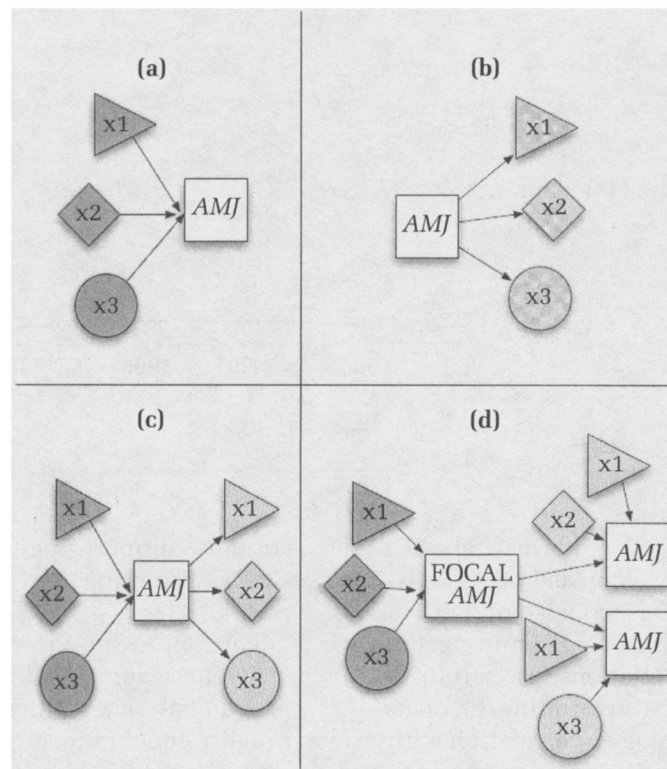
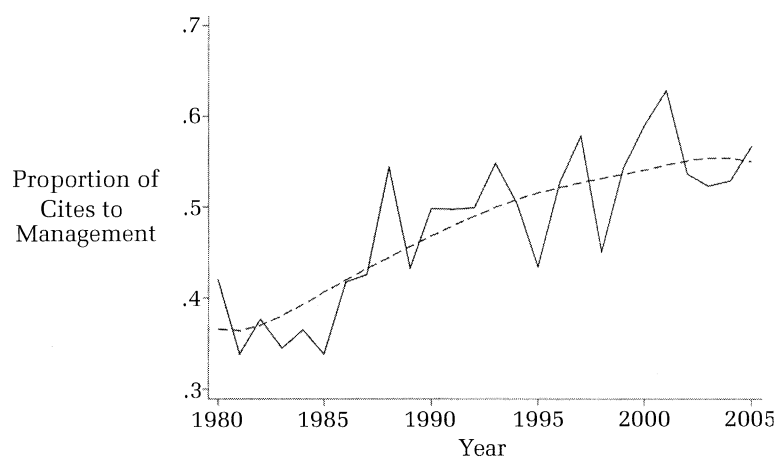


FIGURE 3
Trends in the Proportion of *AMJ* Citations to the Management Literature



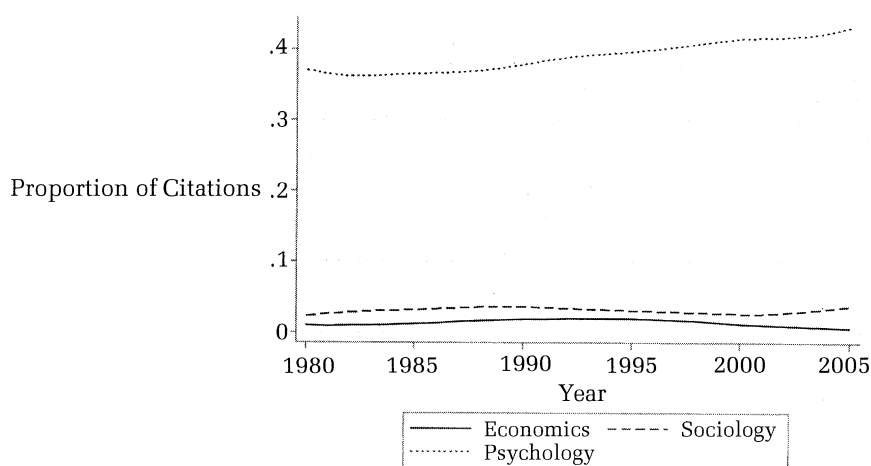
.21), showing that the impact of management research published in *AMJ* on both management and nonmanagement research has increased significantly over time.

We next turn to whether each of two broad areas of management research, micro and macro, (1) is strongly influenced by a single discipline, (2) is strongly influenced by a confluence of disciplines, or (3) exhibits tension among disciplines. To inves-

tigate this issue, we examined (1) the proportion of citations in *AMJ* articles to economics, sociology, and psychology, respectively, and (2) the average correlation between the count of citations to each discipline within articles.

We begin with the outcomes of our analysis of the micro segment of the management literature. As Figure 4 shows, micro *AMJ* articles have been dominated by psychology since 1985, a dominance that

FIGURE 4
Proportion of Disciplinary Citations in *AMJ* Micro Articles



has been increasing over time (pattern 1 above). Sociology and economics have consistently played smaller roles. This finding is consistent with a dominance of a single discipline. Examining the covariance of the number of citations to disciplines in *AMJ* articles also supports this finding, as demonstrated in Figure 5. Psychology's correlation with sociology is near zero, indicating no co-occurrence between the two disciplines, and both psychology and sociology have increasingly negative correlations with economics. In summary, the evidence

strongly supports pattern 1, the dominance of a single discipline (psychology) for micro-oriented *AMJ* articles.

Turning to the macro literature, we find a very different result. As Figure 6 shows, citations to psychology, economics, and sociology have been roughly equal in macro *AMJ* articles, indicating the lack of a singular dominant discipline (pattern 1). To distinguish between simultaneous citation of multiple disciplines in individual articles (pattern 2) and use of different disciplinary lenses by differ-

FIGURE 5
Correlation of Disciplinary Citations in *AMJ* Micro Articles

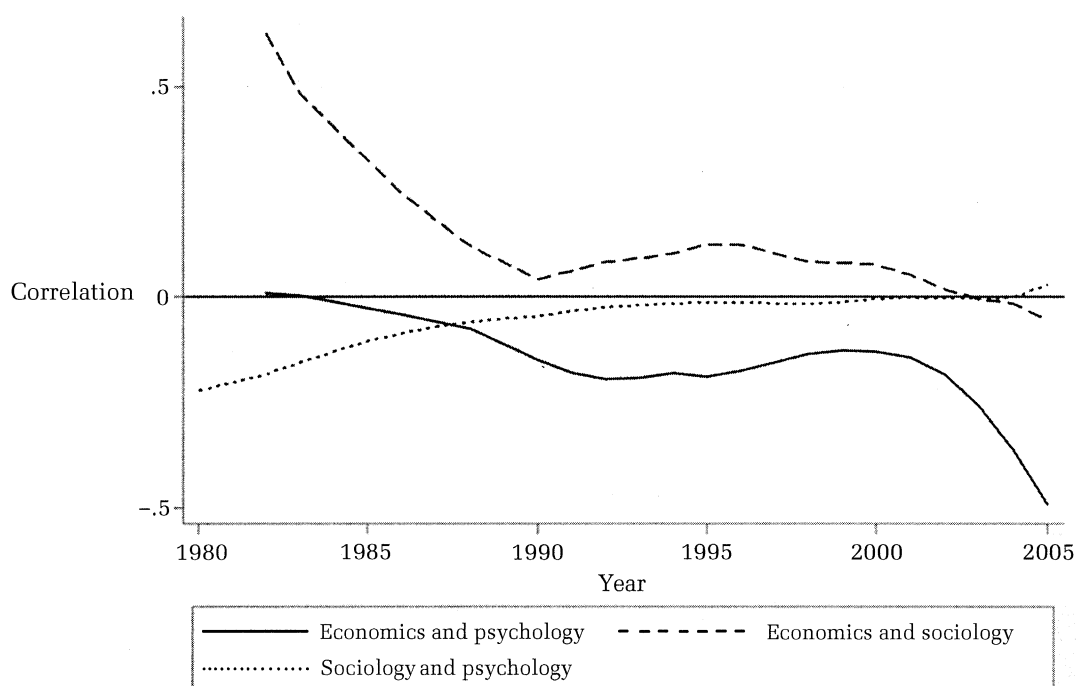
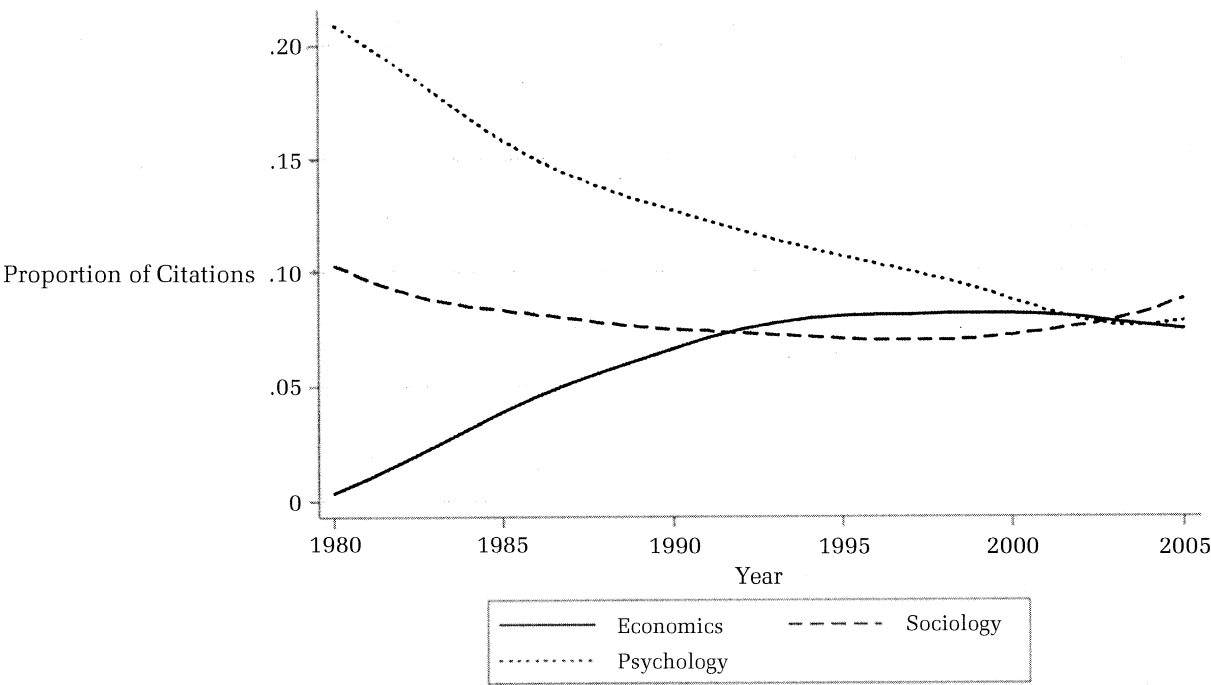


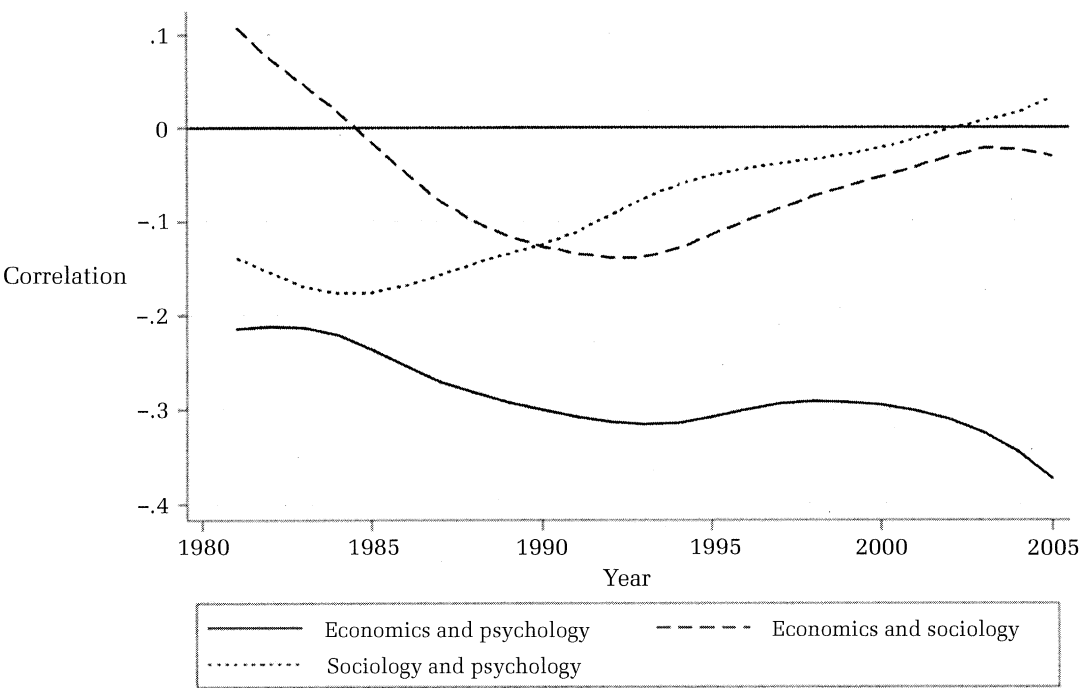
FIGURE 6
Proportion of Disciplinary Citations in *AMJ* Macro Articles



ent articles (pattern 3), we examined the correlations between citations, as illustrated in Figure 7. The results are consistent with pattern 3, a tension among disciplines: a discipline may be dominant

in an article, but it will not cite all the disciplines together. The correlations are generally negative, with economics and psychology having an increasingly negative correlation over time. Sociology's

FIGURE 7
Correlation of Disciplinary Citations in *AMJ* Macro Articles



correlation with economics and psychology has steadily moved from a negative value in the early 1990s to approximately zero in recent years. Thus, we find that the macro-oriented research in management is multidisciplinary, but only draws on one discipline at a time.

Supplemental Analyses

Our primary analysis suggested two topics meriting supplemental analysis. First, the maturation of management as an independent discipline suggested that it would be appropriate to examine its relationship with the source disciplines. Second, having examined the relationships of citations to the three focal related disciplines (psychology, sociology, and economics) *within* articles, we turned to the diffusion of knowledge from these fields across articles over time.

We first examined the role of the management literature and its relationship to the source disciplines in management research. Figure 8 shows a steep increase in the proportion of citations to management research in micro *AMJ* articles, with management nearly matching the citation level of psychology in recent years. However, the correlation between citations to psychology and management indicates that these two literatures appear independently, suggesting two paradigms for micro re-

search, one based on psychology and the other based on management. This trend has actually strengthened over the last 15 years.

Figure 9 provides the relevant information for macro articles. Here, management is by far the dominant disciplinary source, showing steady growth in prevalence over the last 25 years, at least partially at the expense of psychology. The correlations among citation counts suggest that distinct paradigms prevail, albeit to a lesser degree than they do in micro research. Thus, we again see multidisciplinary, one discipline at a time. Psychology has a negative correlation with management, and both sociology and economics have correlations under .25. Despite recent increases, the correlation between management citations and sociology citations has declined over the last 25 years, and the management correlation with economics has increased only modestly.

We now turn to examining the diffusion of disciplinary knowledge across articles over time. A diffusion of knowledge implies that the influence of a particular research article extends beyond its roots. Thus, an examination of the relationship between the citations made by an article and the subsequent citations of that article is particularly germane to the question of whether knowledge created within management enters conversations carried on outside of management.

FIGURE 8
Supplemental Analysis: Disciplinary Citations and Correlations in *AMJ* Micro Articles

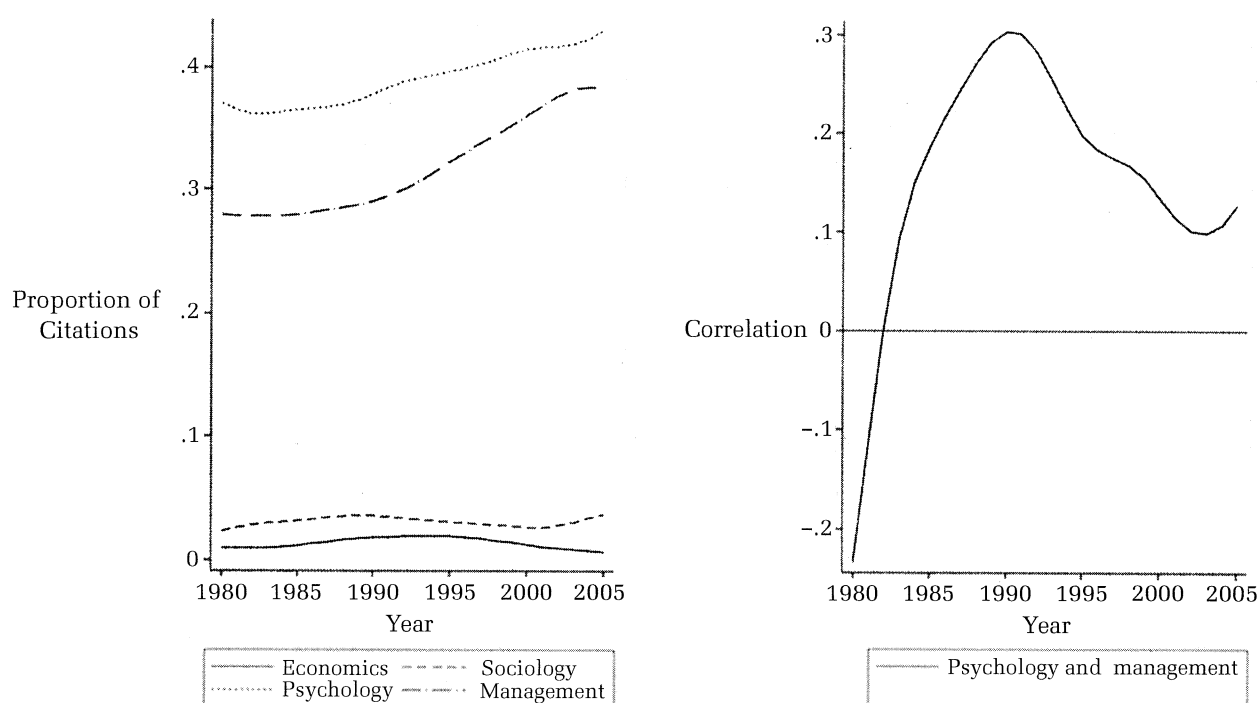
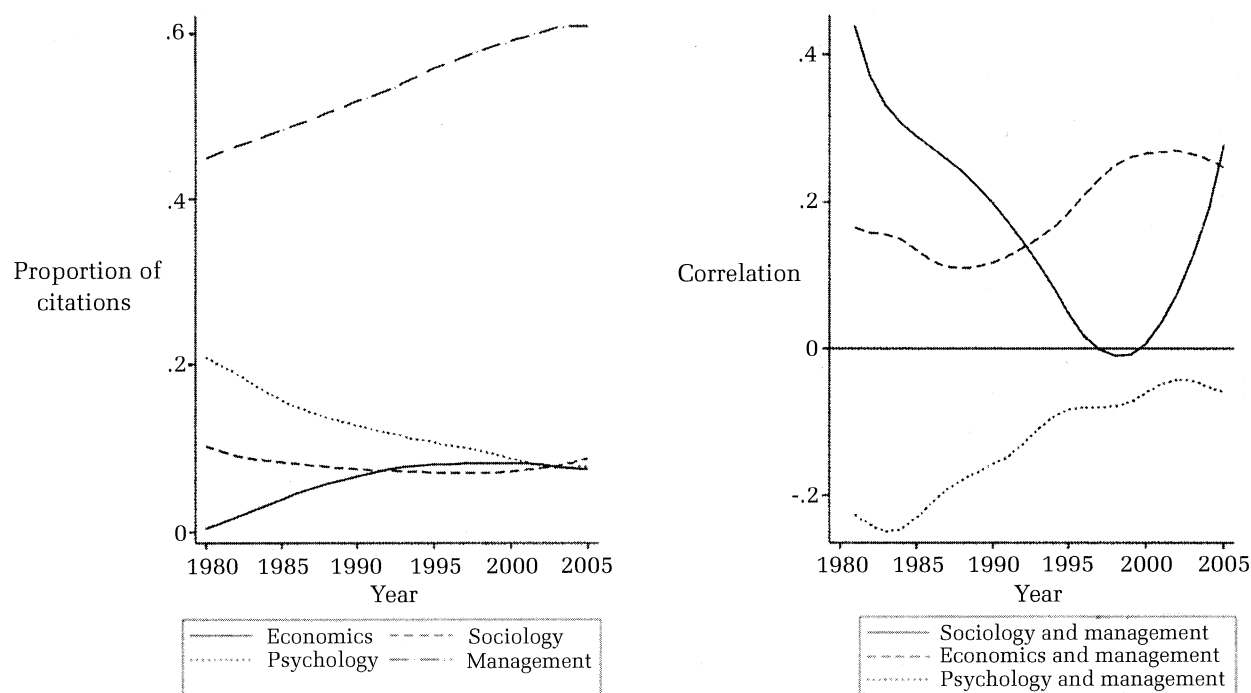


FIGURE 9
Supplemental Analysis: Disciplinary Citations and Correlations in Macro Articles



We examined two aspects of this question, which are represented in panels 2c and 2d of Figure 2, respectively. First, what is the relationship between the disciplines that an *AMJ* article cites and the disciplines of the (*AMJ* and non-*AMJ*) articles that subsequently cite it? (see panel 2c.) Tracking these patterns would address the management literature's role as a potential disseminator of knowledge *across* disciplines. If an *AMJ* article that cites a given discipline heavily is subsequently cited by articles from a range of disciplines, the management literature would appear to have disseminated knowledge among the related disciplines.

Table 2 addresses the first dimension, knowledge diffusion over disciplines. It shows the correlation

TABLE 2
Correlations of Disciplinary Citations by and to *AMJ* Article

Cited by <i>AMJ</i> Article	Cites <i>AMJ</i> Article			
	1	2	3	4
1. Economics	.48**	-.13**	.10**	.11**
2. Psychology	-.13**	.45**	-.00	-.20**
3. Sociology	.01	.03	.49**	-.01
4. Management	.16**	-.06*	.18**	.22**

* $p < .05$

** $p < .01$

of disciplinary citations by and to a focal article (the dark X_i and light shaded X_j in panel 2c of Figure 2). The table is not, we note, a typical correlation matrix, since the X_i and X_j represent citations *to* and *by* disciplinary journals. A positive correlation for a diagonal element indicates that articles based largely on discipline X_i are subsequently cited by articles categorized into discipline X_i . Thus, it indicates discussions occurring within disciplinary perspectives.

A positive correlation for an off-diagonal element indicates that articles based on X_i are subsequently cited by articles in discipline X_j . Thus, the management research is disseminating knowledge among the source disciplines, supporting interdisciplinary discussion. A negative correlation in an off-diagonal indicates no such flow of knowledge via the management literature.

Positive correlations in diagonal and off-diagonal elements are not mutually exclusive. That is, the management research could support both intra- and interdisciplinary discussion. In fact, we find that this is not the case. In general, management research—as exemplified by *AMJ*—supports intra-disciplinary, but not interdisciplinary, discussion.

Turning first to economics, we find a strong positive correlation ($r = .48$) between citations to work in economics by an *AMJ* article and subsequent citations by economics-based articles. There is a

significant, negative correlation with subsequent cites by psychology-based articles ($r = -.13$) and a small but positive correlation with subsequent cites by sociology-based work ($r = .10$). Thus, as economics knowledge enters management research, it subsequently informs economics itself and, to a much smaller degree, sociology.

Citations to psychology-based articles are strongly correlated with subsequent citations by psychology-based articles ($r = .45$). They are negatively correlated with subsequent cites by work in economics ($r = -.13$) and management ($-.22$) and uncorrelated with subsequent cites in sociology articles. Thus, the discussion of psychological constructs in the management literature serves to inform psychology, but not other disciplines.

As for the other source disciplines, citations in *AMJ* articles to work in sociology are strongly correlated with later citations of the *AMJ* articles by work in sociology ($r = .49$, $p < .01$). However, in contrast to the other source disciplines, the correlations between sociology citations in *AMJ* articles and later citations of the *AMJ* work in the other two disciplines are not negative.

AMJ articles that heavily cite work in management are relatively frequently cited by subsequent management articles ($r = .22$). In addition, articles that draw relatively more heavily on the management discipline are also more likely to be subsequently cited in both economics ($r = .16$) and sociology articles ($r = .18$). Although these correlations are low, they show that to some extent, the management discipline is now influencing certain disciplines previously considered only sources. Work in psychology, in contrast, is less likely to cite an article that cites management heavily.

The second aspect we examined was the relationship between the disciplinary basis of a focal *AMJ* article and the disciplinary bases of *AMJ* articles that subsequently cite it (panel 2d in Figure 2). That is, what types of *AMJ* articles build upon, say, heavily economics-based work—other economics-based articles, or those drawing from a broader range of disciplines? A heavily discipline-based *AMJ* article being cited more often by articles that draw from the same base suggests niche conversations without much cross-fertilization to and from other disciplines. In contrast, a heavily discipline-based *AMJ* article being subsequently cited by more broadly based articles suggests interaction among scholars with different disciplinary lineages and diffusion of knowledge beyond a single discipline.

Table 3 examines the second dimension of knowledge diffusion, the dissemination of discipline-based knowledge *within* management. This table is similar in structure to Table 2, except that

TABLE 3
Correlations of Disciplines in a Focal *AMJ* Article and in *AMJ* Articles That Cite It

Cited by <i>AMJ</i> Article	Cites <i>AMJ</i> Article			
	1	2	3	4
Economics	.27**	-.15**	.01	-.12**
Psychology	-.21**	.19**	-.07*	.10**
Sociology	.15**	-.02	.21**	-.03
Management	.12**	-.08*	.07*	-.01

* $p < .05$

** $p < .01$

Table 3 reports the correlations between the disciplines cited by a focal *AMJ* article and by subsequent *AMJ* articles that cite it (panel 2d in Figure 2). Thus, positive values on the diagonal would show that, for example, *AMJ* articles based primarily on economics are picked up by other *AMJ* articles based primarily on economics. Positive values on the off-diagonal would show that management research is bringing two disciplines together, supporting interdisciplinary discussion, and a negative correlation would indicate that the two disciplines remain aloof from each other in the management literature.

Looking first at economics, we find a significant, positive correlation (.27) between economics citations in a focal article and those in *AMJ* articles that subsequently cite it. In contrast, there is a negative correlation between economics and psychology ($r = -.15$) and a nonsignificant correlation ($r = .01$) with sociology. The pattern for psychology is somewhat similar. We find a significant, positive correlation ($r = .19$) between psychology citations in a focal *AMJ* article and in *AMJ* articles that subsequently cite it. Again, in contrast, there is a negative correlation with economics ($-.21$) and a smaller negative correlation with sociology ($-.07$). Sociology shows a somewhat different pattern. Like economics and psychology, it has a positive correlation with itself ($r = .21$). However, it also has a positive correlation with economics ($r = .15$) and a nonsignificant correlation with psychology ($r = -.02$). This pattern suggests that *AMJ* articles that draw heavily on sociology are subsequently cited by *AMJ* articles that draw upon sociology and/or economics. This pattern is consistent with the growth of economic sociology and organizational economics as perspectives for examining business phenomena. Further, focal articles drawing on sociology are not unduly neglected by subsequent articles in psychology.

There is evidence of a positive, but slight, inter-

action of the management discipline with economics ($r = .12$) and sociology ($r = .07$). Although positive, the correlations are actually lower than those observed between economics and sociology themselves. There is a significant negative correlation with psychology ($r = -.08$), indicating that the disciplines of management and psychology remain discrete in the context of management research.

In summary, we find little evidence that the management literature (as represented by *AMJ*) engages in interdisciplinary discussion as it moves forward. The partial exception is sociology, which appears to have disseminated more broadly within the management literature.

DISCUSSION AND CONCLUSION

Almost 50 years after two influential reports recommended that business schools improve their intellectual climates and develop closer relations with “relevant underlying disciplines” (Gordon & Howell, 1959; Pierson, 1959; Porter & McKibbin, 1988), we undertook this study to examine the evolution of research in management. Drawing on insights from the industry evolution literature, we theorized about trends in the citation patterns of related disciplines in management and about the relative impacts of the related disciplines on any dominant design that may have emerged in management.

Using citation analysis data from 1980–2005 for the *Academy of Management Journal*, we found significant support for the maturing of management as a discipline. The internal stock of knowledge of the discipline has grown substantially and, consistently with this growth, *AMJ* articles increasingly cite management research.

Interestingly, the impact of related disciplines on management research and the dominant design for applying those disciplines differs between the micro and macro areas of management research. In the micro area, psychology is clearly the dominant discipline—citations to psychology journals exceed citations to management journals, and citations to economics and sociology journals account for less than 5 percent of the total. In contrast, disciplinary impact in the macro area is much more diverse, with none of the related disciplines predominating. Citations to management journals in the macro area have been steadily increasing and now represent a majority, while citations to economics, psychology, and sociology journals have converged to approximately 10 percent each. Perhaps even more striking are the results regarding the correlations among disciplinary citation counts. The trends indicate a decline, and in most cases, an increasingly negative

likelihood of multiple disciplines being represented in the same research article. Thus, when management researchers do draw on the related disciplines, we seem to do so one discipline at a time.

Before moving to the implications of our findings, it is important that we acknowledge some limitations of our research. First, our analysis rests on the assumption that *AMJ* articles are a representative sample of research in management. To the extent that this assumption is violated, our results may differ from those of a more comprehensive analysis that includes all articles published in the management discipline. Second, our focus on citations by and to *AMJ* implied that we could not undertake a “network” analysis of the disciplinary linkages of the type that Biehl, Kim, and Wade conducted (2006) for links among journals included in the *Financial Times* ranking of business schools. Our results on interdisciplinary links would have been strengthened by an analysis of all inflows and outflows of knowledge, as represented by the pairwise links among the related disciplines rather than as represented by links to a single management journal. Another important limitation of our study is that our reliance on citations and quantitative analysis do not permit a qualitative assessment of the impact that ideas within management and from related disciplines have had on management research. Although citations in general correlate with the impact of ideas within a discipline, differences in norms for citations may affect cross-disciplinary comparisons.

The above limitations notwithstanding, what do these results indicate about the state of the discipline of management? We offer some speculations. Although the signs of maturity and the evidence that a strong body of management-related knowledge has developed are encouraging, the results regarding cross-disciplinary links are of some concern. The applied discipline of management does draw on psychological, economic, and sociological perspectives, yet these perspectives are used as single, specialized lenses.

In the micro area, economics and sociology are all but ignored. Although a case can be made that sociology has relatively little to offer at the individual or small-group level, the same cannot be said for economics, which has a rich tradition of examining issues related to individuals within labor economics. The primary focus in micro research on psychology alone may be related to a reduction in industrial relations programs,⁶ which are traditionally interdisciplinary. Absent integrated multidis-

⁶ The University of Wisconsin and the University of Iowa, for example, no longer have industrial relations programs.

ciplinary Ph.D. programs, the costs of boundary spanning become inordinately high, since management students attempting to span boundaries have to master disciplinary courses in more than one department and integrate multiple perspectives on their own. This state of affairs may result in a self-reinforcing trend toward single-discipline dominance. Absent exposure to economics through a multidisciplinary program, doctoral students who later become management scholars in the micro area may focus primarily on psychology. This limitation also has implications for schools of management recruiting micro researchers who are trained within economics—it is less likely that a search committee comprised primarily of psychologists will hire micro researchers from a relatively alien discipline.

In the macro area, although all three source disciplines seem to be equally represented, the negative or near-zero correlations among them indicate once again that when one perspective is utilized, the others are ignored. Further, the lack of subsequent citations of the research based on one discipline in research based on another seems to suggest the existence of discipline-based subgroups or cliques of scholars. As a result, the situation may be no less troubling than what exists in micro management research. Indeed, the “babelization” of macro management research may be mirrored in trends whereby management departments “specialize” in disciplinary foci. McGrath (2007) discusses the disturbing fact that management departments at highly ranked universities prefer recruiting directly from disciplinary departments rather than from management and give more weight to publications in disciplinary journals than to those in management journals in their tenure deliberations. The increased singularity in disciplinary focus can again be self-reinforcing: recruiting and tenure committees may prefer to hire faculty who are similar to themselves, thus causing parallel schools of thought to develop without the benefit of integration of insights from one another.

In part, our results mirror the unease among researchers in the related disciplines themselves. Much has been written in the disciplinary journals regarding the strained relationships between, say, economics and sociology (Baron & Hannan, 1994; Gimeno & Woo, 1996; Swedberg, 1987) and economics and psychology (Lewin, 1996; Lichtenstein & Slovic, 1971; Smith, 1991).⁷ These articles high-

light the need to examine the underlying assumptions of mainstream thought, integrate different perspectives, and build theory on alternative behavioral assumptions. Such voicing of dissonance may have helped the growth and complexity of issues examined within disciplines, if not necessarily between them. For example, in economics, “rational” theories have had to make room for “behavioral” ones, with a concurrent acknowledgement of the value offered by sociology and psychology (Lewin, 1996).

Cole (1983) and Pfeffer (1993) highlighted the importance of a high level of paradigm development within a discipline, since strong consensus on theoretical and methodological approaches enables more efficient communication and permits interdependent activity and continued growth by creating a positive feedback loop between paradigm development and advancement of knowledge. Thus, in the above example of mainstream economics’ adaptation to behavioral critiques from sociologists and psychologists, the high level of paradigm development may have proved fruitful, since a disagreement can be resolved on the basis of agreed-upon ways of resolving theoretical and methodological disputes.

The mirroring of such disciplinary conflicts in management, however, may have a negative consequence for its continued evolution, given a low level of paradigm development (Pfeffer, 1993). In adopting the foundation reports’ recommendation that management look to the related disciplines to improve intellectual climate and research rigor, we management scholars may have inadvertently done ourselves a disservice. Since multiple disciplines have relevance to management, we may have diluted our paradigm development by viewing our field as a multidisciplinary “[large] tent in which fundamentally any theoretical perspective or methodological approach is as valid as any other” (Pfeffer, 1993).

To be sure, diversity of thought, just like diversity of design, is valuable at all stages of the evolution of an industry or a discipline, and theories and methodologies introduced by scholars from related disciplines certainly provide value to management as it continues to evolve. However, the extent to which the value is captured depends on the ability of our discipline to assimilate relevant perspectives, which itself relates to whether consensus exists on the value of a disciplined integration of multiple perspectives. It is important to note that by *disciplined* integration, we do not mean mixing a potpourri of ideas, but an integration based on a systematic examination of the underlying differences in assumptions, central research questions,

⁷ The relative lack of attention or tension between psychology and sociology may be a result of little overlap in their focal levels of analysis.

and orientations of relevant ideas. If, on the other hand, the related source disciplines exist in some disharmony with each other, management is more likely to be fragmented and dissonant, a cause for concern as articulated by Pfeffer (1993).

When interpreted in this light, our results suggesting that the micro area of research has a single disciplinary influence may indicate that it has stronger paradigm development than the macro area. This does not, however, mean that micro researchers face less of a challenge than macro management researchers. Within micro management research, the stronger core presence of psychology may enable assimilation of insights from economics, and a continued evolution in the micro area may benefit from an examination of what economics has to offer. To the extent, though, that the two disciplinary perspectives represent fundamental differences in values, assumptions, and orientation, these latter effects may dominate paradigmatic consensus in terms of receptivity to “integrating” economics into its fold.

In contrast, the macro area of research may face a different set of issues. This area needs a better integration of the disciplinary perspectives, rather than the current multidisciplinary approach of drawing on only one discipline at a time. The lack of strong paradigm development is of concern, for the reasons explicated by Pfeffer (1993). At the same time, there may be a better chance for a disciplined integration of the related disciplinary perspectives, given that the correlations among disciplines are less negative, or even slightly positive.

Perhaps one important way to resolve these problems would be to recall the early motives for the founding of business schools: a perceived need for scholarship with practical relevance and for managers equipped to deal with real-world problems. Management research can create value when theory development has been uniquely motivated by the challenges faced by firms and managers (Helfat, 2007; McGrath, 2007). So motivated, management research can provide theoretical insights not available from the related disciplines alone. We argue that, to advance management research, it is not merely enough to conduct psychology-, sociology-, or economics-based research in a business setting. Doing so creates little value beyond that available in the particular related discipline. Rather, it is necessary to connect disciplinary insights with those generated by the increasingly rich management discipline. Beyond generating unique theoretical advances, such combinations would help address a major critique of management research and education: that it no longer relates to real business problems. Unlike most other areas of academic en-

deavor, management research ultimately must provide the requisite theory and conceptual frameworks that help in managing and leading people in business organizations (Alsop, 2007).

The atheoretical approach of the 1940s and 50s failed to provide those frameworks, partially triggering the subsequent disciplinary focus. However, if that focus leads to theoretical and conceptual frameworks that do not inform those who manage firms and lead people, management research will have failed to an equal degree. A parallel can be found in the challenge of teaching management. Richard Schmalensee, dean of the MIT Sloan School of Management, relates having former GE chairman Jack Welch teach a class: “A lot of what he talked about related to theory taught in other classes, but *Jack doesn’t make the connection and we’re not sure students do either*” (Alsop, 2007; emphasis added). MIT paired Welch with a professor to ensure that students made those connections; similarly, theoretically rigorous work from the management discipline can and should be combined with insights from other disciplines to advance theory and frameworks that advance the practice of management. (For an elaboration of this view and descriptions of other possible actions that can bridge theory and practice, see Shapiro, Kirkman, and Courtney [2006]).

Our results suggest that it is early days in the process of creating that integration. In both the micro and macro realms, the management literature plays a substantial role, but it is not significantly paired with the related disciplines. The consistently weak correlation between psychology and management in the micro realm suggests not a pairing, but rather two distinct approaches—one based on the management literature, the other on psychology. The same situation exists, although perhaps less extremely, in the macro realm, with neither economics nor sociology being highly integrated with management. With the maturation of management as a discipline, the field is poised to advance this integration.

Unfortunately, although the field would benefit collectively from this integration, it is far from clear that individuals would benefit from attempting it. Several challenges loom. First, it is becoming increasingly difficult to remain current in one discipline, let alone master multiple disciplines. Junior faculty are in many ways best positioned to do so, as they have often recently taken a broad range of courses. However, the demands of the promotion and tenure process strongly discourage such an investment on their part. The resulting inertia often persists even once tenure is earned. Secondly, the review process may discourage this type of integra-

tion. Papers that utilize more than one discipline need to get “buy in” from multiple reviewers who appreciate multiple perspectives. The reward/cost ratio for an individual scholar seems low here because the chances of getting such buy-in may be low, and it is unclear that there is any greater prestige for such a paper if it does successfully navigate the review process.⁸

As we look forward to the next 50 years of research in our discipline, then, there is much reason to celebrate, and also more reason to embrace the challenges that face us. Management has clearly evolved into a distinct discipline, and it has greatly benefited from its bonds with related disciplines. At this juncture, though, it also behooves us as management researchers to examine these connections more closely to ensure that they do not bind us, but rather enable us to provide valuable insights regarding management practice. An integrated, disciplined approach toward our disciplinary bonds will go a long way in achieving this objective. We need to be cautious in how we interact with the related disciplines. Certainly we need to welcome discipline-based scholars with theoretical and methodological insights that will strengthen our research. However, we also need to be wary of bondage to a singularity of disciplinary focus that can blind one to other useful perspectives. Productive yet cautious interaction may require management researchers (whether they are diversifying entrants from related disciplines, or de novo entrants trained within) to move outside our comfort zones and grow through a disciplined integration of relevant perspectives. It may also require a change in how journals conduct reviews, so that authors who engage in such boundary spanning do not meet with resistance from reviewers bound by singular disciplinary foci.

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⁸ We thank Joseph Mahoney for helping us articulate the tension between collective and individual rewards.

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This article continues with an appendix.

APPENDIX

Categorization of Management Journals by Field

Journal	Field	Journal	Field
<i>Academy of Management Executive</i>	General	<i>Journal of Management</i>	General
<i>Academy of Management Journal</i>	General	<i>Journal of Management Inquiry</i>	General
<i>Academy of Management Review</i>	General	<i>Journal of Management Studies</i>	General
<i>Administrative Science Quarterly</i>	Macro	<i>Journal of Occupational Behaviour</i>	Micro
<i>Advances in Strategic Management</i>	Macro	<i>Journal of Organizational Behavior</i>	Micro
<i>British Journal of Management</i>	General	<i>Journal of Organizational Behavior Management</i>	Micro
<i>Business Ethics Quarterly</i>	Micro	<i>Journal of Organizational Change Management</i>	Micro
<i>Business History</i>	Macro	<i>Journal of Small Business Management</i>	Macro
<i>Business History Review</i>	Macro	<i>Journal of World Business</i>	General
<i>California Management Review</i>	General	<i>Leadership Quarterly</i>	Micro
<i>Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration</i>	General	<i>Long Range Planning</i>	Macro
<i>Decision Sciences</i>	General	<i>Management Learning</i>	General
<i>Entrepreneurship and Regional Development</i>	Macro	<i>Management Science</i>	General
<i>Forbes</i>	General	<i>MIT Sloan Management Review</i>	General
<i>Fortune</i>	General	<i>Negotiation Journal</i>	Micro
<i>Group and Organization Management</i>	Micro	<i>New Technology Work and Employment</i>	Micro
<i>Group Decision and Negotiation</i>	Micro	<i>Omega-International Journal of Management Science</i>	General
<i>Harvard Business Review</i>	General	<i>Organization Science</i>	General
<i>Human Relations</i>	Micro	<i>Organization Studies</i>	General
<i>Human Resource Management</i>	Micro	<i>Organizational Behavior and Human Decision Processes</i>	Micro
<i>International Journal of Human Resource Management</i>	Micro	<i>Organizational Dynamics</i>	Micro
<i>International Journal of Management Reviews</i>	General	<i>Organizational Research Methods</i>	General
<i>International Journal of Manpower</i>	Micro	<i>R&D Management</i>	Macro
<i>International Journal of Selection and Assessment</i>	Micro	<i>Research Policy</i>	Macro
<i>International Journal of Technology Management</i>	Macro	<i>Research-Technology Management</i>	Macro
<i>Journal of Business and Psychology</i>	Micro	<i>Strategic Management Journal</i>	Macro
<i>Journal of Business Ethics</i>	Micro	<i>Systems Research and Behavioral Science</i>	Micro
<i>Journal of Business Research</i>	General	<i>Technological Forecasting and Social Change</i>	Macro
<i>Journal of Business Venturing</i>	Macro		
<i>Journal of Economics and Management</i>	Macro		
<i>Journal of Human Resources</i>	Micro		
<i>Journal of International Business Studies</i>	Macro		