

HOW ADVANCED IS THE STRATEGY PARADIGM? THE ROLE OF PARTICULARISM AND UNIVERSALISM IN SHAPING RESEARCH OUTCOMES

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As the field of strategy reaches its 25th anniversary, we examine how far the field has progressed during that time. Both management and strategy research have been characterized as being in an early stage of development. We draw on Kuhn's (1996) paradigm development model, which posits a connection between a field's stage of maturity and research processes and outcomes, to assess the maturity of the strategy field. We conduct two studies. The first is a cross-discipline comparison of productivity norms for university faculty. The second study examines longitudinal research outcomes for a sample of 945 strategy faculty. Our results indicate that strategy has the attributes of both an early stage and mature field: while overall research norms are low relative to other fields, they are driven far more by merit-based than non-merit factors. Copyright © 2005 John Wiley & Sons, Ltd.

Compared to many academic disciplines, strategy is a young field: 2003 marked the 25th anniversary of the field's first textbook (Hofer and Schendel, 1978), and 2004 was the Silver Anniversary of the *Strategic Management Journal*. Despite its youth, strategy has clearly become an integral component of the global business school landscape. Business Policy and Strategy is the second largest division of the Academy of Management, and counts 25 percent of its membership from outside the United States. Furthermore, half the membership of the Strategic Management Society lies outside North America. The discipline has begun to influence its 'parent' field: the discipline's flagship journal, *SMJ*, is surpassed only by *AMR* for article impact by a business journal (Institute for Scientific Inquiry, 2002), and has been described as 'the

predominant academic journal influencing the field of management' (Tahai and Meyer, 1999: 279). The importance of the field also resonates with the practitioner audience, as indicated by *Business Week's* selection of *SMJ* as one of the key indicators of b-school 'brainpower.' Clearly, strategy as a discipline has grown substantially in both scope and influence over the last few decades.

Independent of prominence, though, how far has the field of strategy matured during this time? Stated differently, is strategy in its infancy, adolescence, or middle age? The paradigm model (Kuhn, 1996) asserts that research activities and outcomes vary as a function of a field's level of maturity: early-stage disciplines are expected to exhibit lower levels of research productivity, and research outcomes are often determined by factors such as prestige rather than merit.

We conduct a number of analyses to explore this question, using two discrete samples. We draw from a national survey to determine whether gross research norms differ for management faculty vs.

Keywords: strategy research; paradigm development; research productivity

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their counterparts in business schools and the broader population of university faculty. Second, we use a longitudinal series of structural equation models to identify drivers of research outcomes for a sample of strategy faculty. By evaluating both the levels and determinants of research productivity, we provide a comprehensive assessment of the field's maturity.

LITERATURE REVIEW AND HYPOTHESES

The paradigm development (Kuhn, 1996) rationale argues that (a) some disciplines are more advanced than others, and (b) these differences affect the way research is done. Communities with more developed paradigms have greater structure and predictability (Lodahl and Gordon, 1972), and fewer debates 'over legitimate methods, problems, and standards of solution' (Kuhn, 1996: 48). In contrast, less mature fields have weaker levels of consensus among researchers. These disagreements create barriers to research productivity, including higher journal rejection rates (Hargens, 1975), and longer manuscript review cycles and more revisions (Beyer, 1978). Consequently, researchers in more advanced paradigms may be expected to be more productive than their counterparts in less developed fields.

A field's level of paradigm development is expected to affect decisions about which articles are published and cited. Evaluation of a scientific contribution on the quality of ideas represents a universalistic standard, while evaluations based on non-merit factors (e.g., pedigree, advisor reputation, social networks) are deemed 'particularistic.' Research outcomes in mature disciplines are expected to be based on universalistic criteria:

Science is essentially universalistic, *who* states a proposition is as such irrelevant to the question of its scientific value ... Where technical competence ... and the like are of primary functional importance, it is essential that particularistic considerations should not enter into the bases of judgment too much. (Parsons, 1939: 462-463)

Universalism

Precocity and ability are universalistic predictors of research outcomes. Precocity, publishing early in one's career, has been linked with subsequent

contribution to the literature (Long, Allison, and McGinnis, 1979; Rogers and Maranto, 1989). However, a significant number of early publishers never author another article (Zivney and Berlin, 1992), and precocity has limited effects on downstream outcomes such as job change and tenure decisions. Hence, outcomes may also be driven by additional measures of ability. Author order provides an indicator of merit, with lead authorship indicating the greatest proportion of contribution (Academy of Management, 1998; Floyd, Schroeder, and Finn, 1994). Additionally, publication in a higher-quality journal is also likely to indicate the ability of an individual researcher.

Particularism

The paradigm framework asserts that, in immature fields, research outcomes will be driven by particularistic criteria, an approach at odds with the normative model of science. A pedigree from a top school is a common basis for particularism (Allison and Long, 1987; Baldi, 1995; Beyer, Chanove, and Fox, 1995; Cable and Murray, 1999; Long *et al.*, 1979). Affiliation with an elite institution offers many advantages in the pre-paradigmatic field, including social ties, perceptions of competence, and nepotism (Crane, 1967; Pfeffer, Leong, and Strehl, 1977). However, institutional prestige has a limited relationship with the quality of faculty or education provided, is slow to change, and is driven more by halo factors than academic research (Keith and Babchuk, 1994). Similarly, many non-merit factors have been found to positively affect prestige, including department size, pedigree of its faculty (Hagstrom, 1971), and overall university reputation (Keith and Babchuk, 1994).

Despite the use of blind reviews, institutional prestige has been found to positively affect publication outcomes in less developed paradigms (Crane, 1967; Pfeffer *et al.*, 1977). Prestige has been linked with perceived quality of published articles: the prestige of an author's degree-granting institution has a direct effect on article citation, independent of article quality (Rogers and Maranto, 1989). The strength of these findings led one author to conclude: 'Stratification of the social sciences is primarily a function of the underlying *political* process in which certain groups are systematically denied information about and access to positions of influence (Yoels, 1974: 274).'

In contrast, studies of paradigmatically advanced fields find prestige to be only weakly related to subsequent research productivity or citations (Long *et al.*, 1979).

Citations are not evenly distributed among authors. Cole and Cole (1971) report that a few authors received the bulk of citations and some receive none—only 2 percent had 600 or more citations to their work and 86 percent had fewer than 15. In an immature paradigm, given the choice between citing two articles of comparable quality, the paper by a well-known author will be cited more frequently than one by a junior scholar (Merton, 1968; Zuckerman and Merton, 1971). Such a practice is particularistic as it is irrespective of quality. In a study of advanced paradigms, Cole and Cole (1967) reported that the most influential papers were by a group they label Perfectionists: persons who produced very few, but high-quality articles. They hypothesized that this relationship would be different in less advanced disciplines: 'When scientists cannot agree on what high quality is, their concern is likely to be with quantity of output' (Cole and Cole, 1971: 26). In other words, in immature paradigms, prolific authors will be perceived as doing better research, and hence have each of their articles cited more frequently.

Research outcomes

Research on universalism and particularism in academe can be divided into *primary* (publications and citations) and *secondary* outcomes (hiring and job changes). Primary outcomes are the most appropriate level to test for universalistic and particularistic effects. Consider a hypothetical scenario where publication and citation are controlled entirely by particularistic criteria. Assume also that recruiting and tenure decisions are made solely on the basis of research output. By studying only secondary outcomes, one would mistakenly conclude this scenario represented the apex of universalism. Within academe, research outcomes have been linked with both universalistic (Beyer *et al.*, 1995; Rogers and Maranto, 1989) and particularistic (Allison and Long, 1990) criteria. Similarly, while the bulk of studies link particularistic criteria to career outcomes (Allison and Long, 1987; Baldi, 1995; Long *et al.*, 1979), support has also been found for universalistic criteria (Cable and Murray, 1999). A review of the studies in Table 1

identifies four design issues to advance the study of universalism and particularism.

Potential for omitted variables

Most studies include only a subset of possible determinants, raising the potential for bias due to omitted variables. The question is not whether universalism applies in some circumstances and particularism in others, but the relative importance of each in a given setting (Beyer, 1978). Thus, studies should include both universalistic and particularistic factors in order to assess their relative effect.

Temporal instability

Most studies analyze data at a single point in time, with the time window used varying widely across studies. The determinants of research productivity are not stable over time. Reskin (1977), for example, reported different drivers of publications at 3 and 10 years post degree. Given the lack of data for the intervening years, no explanations could be offered. Inconsistent findings across studies may simply reflect temporal instability. Consequently, it would be prudent to test for effects across a range of adjacent periods.

Strong interrelationships among variables

While publication and citation are unique outcomes, they are tied to each other—i.e., publishing is a necessary but insufficient condition for accruing citations. Still, having a large publication count does not guarantee having many citations. Similarly, particularistic and universalistic factors may covary (Bedeian and Field, 1980). Analytically, structural models are a preferred alternative to multiple regression models for determining such relationships (Rogers and Maranto, 1989).

Statistical power and effect sizes

Power is an issue for studies with limited sample size, or with a low ratio of observations to variables, and is an alternative explanation for mixed or null findings. In a supplementary analysis (available from the authors), we used meta-analysis to integrate Table 1(a) articles. Studies of the effect of universalism yield an overall effect of

Table 1. Summary of related research

Study	Sample	Predictors	Outcomes	Results
<i>(a) Research outcomes</i>				
Allison and Long (1990)	179 job changes	Change in job prestige	Publications and citations per article	Prestige positive effect on publication and citation
Bakanic, McPhail, and Simon (1987)	2337 journal submissions	Author and manuscript characteristics, editorial procedures	Journal revisions and acceptance	Current prestige related to acceptance
Beyer, Chanove, and Fox (1995)	400 journal submissions	Particularism, gatekeeping, reviewer style, and selective amplification	Reviewer and editor assessment of manuscripts	Limited support for particularism variables
Crane (1967)	1500 authors in 9 journals	Affiliation, age, doctoral origin, and use of blind reviews	Editorial decisions	Characteristics of the individual affected editorial decisions
Dey, Milem, and Berger (1997)	15,000 university faculty; multiple fields	Carnegie research classification	Article and book publishing	Support for accumulation advantage.
Long <i>et al.</i> (1998)	279 management faculty	Quality of PhD and current affiliation	Publications and citations	PhD unrelated, affiliation related to both outcomes
Park and Gordon (1996)	96 Strategy PhDs	Gender, precocity, graduate program in current university	Publications	Precocity and graduate program both predictors of future publications
Pfeffer, Long, and Strehl (1977)	Institutional contributions to 18 journals	Institutional representation on editorial board and level of paradigm development	Institutional publications	Institutional factors impact publications in less developed fields
Reskin (1977)	238 chemistry PhDs	Precocity, authorship, doctoral training, and first job	Publications and citations	Outcomes driven by both ability and socialization factors
Rogers and Maranto (1989)	162 psychology faculty	Precocity, gender, quality of degree program, and first job	Publications and citations 6 years post degree	Graduate program less important than precocity
<i>(b) Secondary outcomes</i>				
Allison and Long (1987)	274 job changes	Prestige, publications, and citations	Job changes	Prestige more important than universalistic factors
Baldi (1995)	271 sociologists	Prestige, precocity, mentor, and gender	Prestige of new job	Prestige more important than precocity
Cable and Murray (1999)	159 management job applicants	Publication success, revisions and author order; PhD prestige and chairperson eminence	Job offers, prestige of offers, and starting salaries	Outcomes driven by universalistic criteria
Long, Allison, and McGinnis (1979)	239 biochemists	Prestige, publications, and citations	Job changes	Prestige more important than universalistic factors
Park and Gordon (1996)	96 Strategy PhDs	Gender, prior publications, graduate program in university where employed	Tenure	Gender and prior publications are predictors of tenure

0.13 for publications, and 0.12 for citations. Studies of particularism yield lower effects: the average effect of particularism is 0.02 for publication, and 0.04 for citations. Total explained variance (R^2 , including control variables) averages 0.20 in

studies of the drivers of publication and 0.28 in studies of citations. The use of large samples and more sophisticated measurement schemes—e.g., factor submodels—can help address such problems.

Assessment of the field

Where does management fit on the maturity spectrum, and what are the implications for research practices? In the pecking order of paradigm development, hard sciences are considered more advanced than social sciences (Beyer, 1978; Hargens, 1975; Lodahl and Gordon, 1972; Zuckerman and Merton, 1971). The social sciences, in turn, dismiss even less advanced 'professional schools.' Business administration is one of the youngest professional schools, along with education and social work (Parsons and Platt, 1973). Similarly, Pfeffer (1993) characterizes management as being in a 'pre-paradigmatic state' by virtue of being less advanced than psychology, economics, political science, and other social sciences. Management research would thus appear to be near the nadir of the paradigm development spectrum.

In summary, strategy is one of the youngest subspecialties in the immature management field (Pfeffer, 1993). Therefore, under the paradigm model (Kuhn, 1996) we expect (a) strategy faculty to have lower levels of research output than peers in more advanced fields, and (b) research outcomes for strategy faculty to be driven more by particularistic factors than universalistic factors. Therefore we propose:

Hypothesis 1: Research productivity norms will be lower for management faculty than for other disciplines.

Hypothesis 2: Particularistic factors will be positively related to research outcomes.

Hypothesis 3: Universalistic factors will have a lesser effect on research outcomes than particularistic factors.

Hypothesis 4: Prolific authors will have more citations per article than less prolific authors.

We draw on two discrete samples and separate analyses to test hypotheses. The first sample of faculty in management and other disciplines is used to test Hypothesis 1, while the second sample of strategy faculty is used to test Hypotheses 2-4. Several considerations guided our use of these different samples. First, Pfeffer's (1993) critique focused explicitly on management. Second, given the wealth of subfields in any particular area, finer-grained comparisons would be cumbersome. Strategy faculty have been found to have comparable

levels of research productivity as their colleagues do in organizational behavior and organizational theory (Wiseman and Skilton, 1999: 307), a conclusion echoed by comparison data reported in Study 2. Consequently, the use of management faculty for Study 1 is appropriate for making comparisons to other fields, and should not bias our results.

Separately, a study of universalistic and particularistic effects is best done at the level of a scientific community (Kuhn, 1996). The strategic management community is an ideal choice for this unit of analysis: it has a clearly identified journal pool (MacMillan, 1989), a low level of publication outside of this pool, sufficient membership and longevity to allow for longitudinal testing, and publication norms generalizable to the broader population of management faculty.

STUDY 1

To test Hypothesis 1, we compare average yearly publication norms of management, business, and faculty from all other disciplines. Data were provided by the Higher Education Research Institute (HERI, 1997), a nonprofit university-affiliated research organization which has conducted annual surveys of teaching activities and outcomes since 1989. Data are collected from several hundred universities, and respondents are limited to full-time faculty; response rates by individual faculty members are in the 55-60 percent range. Data were extensive, based on 33,986 respondents; approximately 2300 of these were faculty from schools of business.

In Figure 1, we compare research norms for management faculty with two other populations: the pool of other business faculty, and then the broader pool of faculty from all disciplines. The survey items for HERI data are designed to measure ranges of variables vs. specific values—e.g., the item categories for publications were none, 1-2 articles, etc. Therefore, we report chi-square statistics in Figure 1 to compare these distributions across areas.

Hypothesis 1 was strongly supported for three distinct research norms: total articles published, articles in the last 2 years, and hours per week spent on research. The percentage of management faculty reporting two or fewer published articles was 57.5, compared to 42.8 for other business

faculty and 34.2 for all disciplines. Similarly, nearly half (48.9%) of management faculty reported no articles in the last 2 years, compared with 35.6 percent for other business faculty, and 27.2 percent for all disciplines. These results are consistent with Pfeffer's critique that management, and strategy by extension, is in an early stage of paradigm development.

STUDY 2

Sample

To identify strategy faculty, we used McGraw-Hill's *Directory of Management Faculty* (Hasselback, 1994), a compilation of approximately 5000 full-time management faculty from over 800 4-year institutions. The directory provides descriptive information, such as each person's teaching and research specialization, degree date, and degree-granting institution. We included both teaching and research faculty to avoid an upward bias in productivity rates (Long *et al.*, 1998; Rogers and Maranto, 1989). We excluded faculty with missing data for degree date or teaching/research specializations, faculty without doctoral degrees, and faculty whose degrees were awarded before 1970 or after 1990. This yielded a final sample size of 945 faculty. Supplemental tests indicated that these sampling parameters introduced no bias to our results.

Measurement

Publishing outcomes

We collected data on *publications* in MacMillan's (1989) 14 strategy-oriented journals for the years 1970-93 inclusive for each of the 945 faculty; a total of approximately 13,000 person-years. A comparison with other high-quality journals (Gomez-Mejia and Balkin, 1992) indicated that the MacMillan list captured over 95 percent of publishing activity by our sample.

Citation outcomes

We used the *Social Science Citation Index* (SSCI) to collect citation data. We constructed two different variables based on this citation data: *citations* was a cumulative count of citations accrued by an individual. *Citations per article* was the ratio of a

person's cumulative citations to their total number of published articles.

Universalism

We measured universalism with three indicators. *Precocity* has been defined as having had publications prior to completing the PhD (Rogers and Maranto, 1989). We measured this as the count of articles published within 1 year of degree completion, to allow for lags in publication time. We then constructed two additional measures: whether or not the subject was the *lead author* on an early publication, and whether or not that article was *A-tier quality*, defined as membership in MacMillan's (1989) set of 'outstanding quality' journals.

Particularism

We measured particularism as the prestige of a faculty member's degree-granting institution using three indicators. First, a prominent attribute of elite management programs is high admission scores, measured as the *average GMAT score* (D'Aveni, 1996) of incoming students. Second, the *number of editorial board seats held by a department* is often used to assess prominence. Board assignments are thought to be assigned through particularistic criteria in pre-paradigmatic fields (Pfeffer *et al.*, 1977; Yoels, 1974). We coded board membership for each journal in MacMillan's (1989) 'outstanding quality' pool by institution, excluding *Harvard Business Review* as it does not have a broad-based editorial board. Our third prestige measure was departmental *ratings in the Gourman report* (Cable and Murray, 1999).

Analysis

We tested hypotheses using LISREL, for two reasons. First, although universalism and particularism are complex constructs, they are typically measured with single indicators. Our use of factor submodels provides greater precision in tapping these underlying dimensions. Second, because our dependent variables are interrelated, a set of simultaneous equations is preferable to separate regression models, which may misstate the effects on a particular dependent variable. To address temporal stability, we measured our dependent variables as

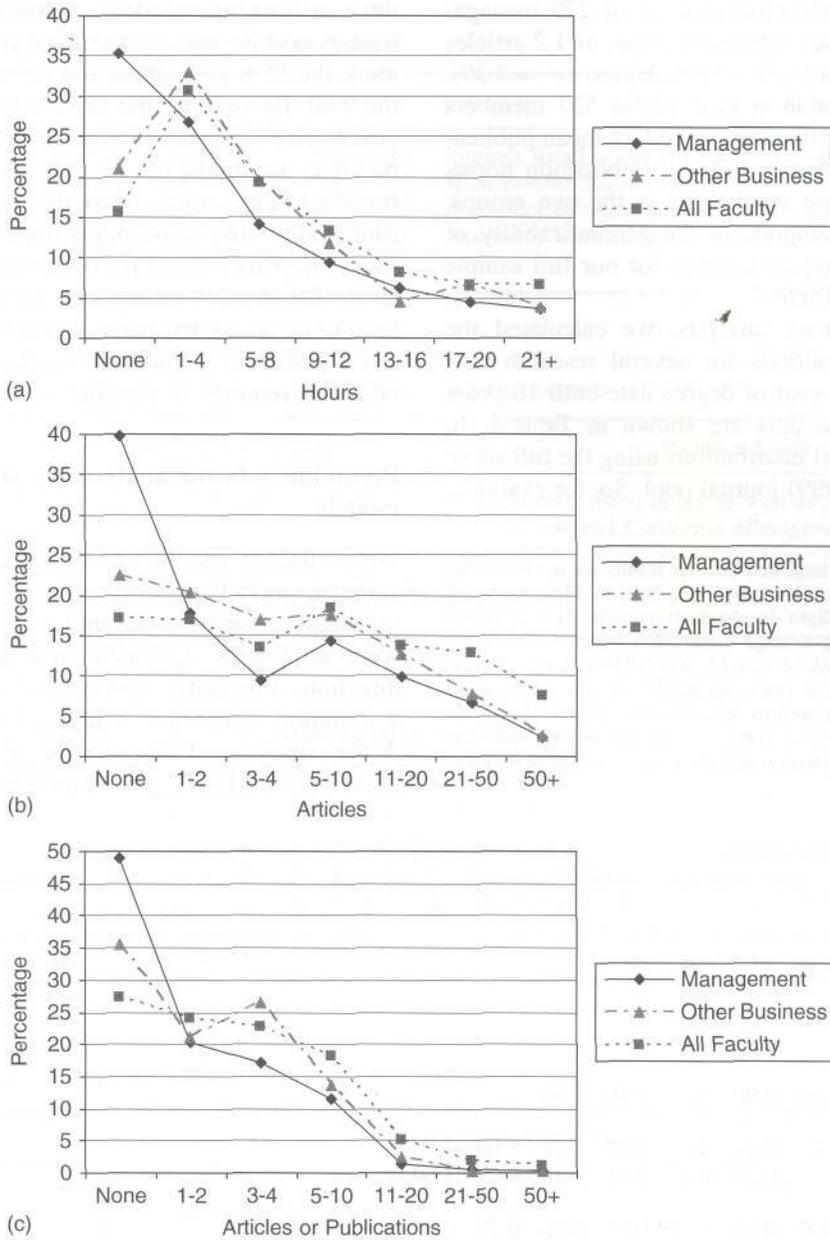


Figure 1. Research and publishing norms in academe. (a) Hours per week spent on research and scholarly writing, (b) Total articles published in academic and professional journals. (c) Total articles published or presented in last 2 years. Note: Chi-square tests indicate that 'Management' distributions are significantly different from 'Other Business' or 'All Faculty' at $p = 0.01$ or greater. All data were provided by the Cooperative Institutional Research Program Higher Education Research Institute, UCLA, Los Angeles, CA. Data for 'All Faculty' columns were taken from the American College Teacher, National Norms for the 1995-96 HERI Survey, self-published. Other columns are based on data provided to the first author by HERI 2/97

years relative to degree date. We report six sets of structural models, starting with research outcomes at 5 years post PhD, up through 10 years post degree.

RESULTS

To assess generalizability, we compared our publication counts against Long and colleagues (1998),

who studied publication patterns of 279 management faculty. They reported a mean of 1.2 articles per faculty by 12 years post degree ($a = 2.39$). Data were available at year 12 for 527 members of our sample, with a corresponding mean publication count of 1.11 ($a = 2.66$). Publication norms appear to be quite similar across the two groups, thus providing support for the generalizability of findings. Descriptive statistics for our full sample are reported in Table 2.¹

As a preliminary analysis, we calculated the percentile distributions for several research outcomes, from the year of degree date until 10 years post PhD. These data are shown in Table 3. In part (a), we report distributions using the full set of MacMillan's (1989) journal pool. So, for example,

¹ Supplemental tests indicated that our results are not biased by collecting data over such a broad time horizon. First, we tested the stability of paradigm development over the 21-year period sampled by studying average dissertation length, an indicator of consensus. ANOVA ($F = 1.12$, $p = 0.33$) indicated no systematic variation across years. Separately, we also analyzed the stability among relationships between our variables by dividing the sample into two cohorts: graduates before and after 1980. Pairwise comparison of correlations reported no significant differences.

three articles are needed for the 90th percentile 6 years post degree. For the same year, five articles mark the 95th percentile, and seven articles mark the 99th. By year 10, the gap doubles from that of year 6. To examine if different journal quality criteria affect accumulation, we developed benchmarks for MacMillan's more restrictive pools of 'significant quality' and 'outstanding quality' journals. As shown in parts (b) and (c) of the table, publication norms for these two categories are extremely similar. For an additional point of comparison, we also developed longitudinal benchmarks for cumulative citations, reported in part (d).

Preliminary factor analysis for structural models

We evaluated the factor structure of our measurement models prior to testing hypotheses. Factor loadings for the three-indicator prestige model were all highly significant and in the expected direction. Precocity, however, did not load on a common dimension with lead authorship and A-tier variables. Consequently, we decomposed universalism into two dimensions: precocity,

Table 2. Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Publications: year 5	1.00														
2. Citations: year 5	0.69	1.00													
3. Citations per article: year 5	0.43	0.65	1.00												
4. Publications: year 7	0.95	0.64	0.40	1.00											
5. Citations: year 7	0.74	0.83	0.62	0.71	1.00										
6. Citations per article: year 7	0.39	0.47	0.81	0.36	0.69	1.00									
7. Publications: year 10	0.91	0.61	0.35	0.96	0.70	0.33	1.00								
8. Citations: year 10	0.74	0.82	0.49	0.74	0.89	0.47	0.77	1.00							
9. Citations per article: year 10	0.49	0.52	0.76	0.49	0.68	0.81	0.50	0.67	1.00						
10. Precocity	0.55	0.46	0.35	0.52	0.45	0.31	0.47	0.37	0.32	1.00					
11. Lead author	0.34	0.19	0.29	0.31	0.30	0.32	0.25	0.15	0.30	0.54	1.00				
12. A-tier publication	0.49	0.37	0.42	0.47	0.42	0.35	0.40	0.37	0.38	0.71	0.65	1.00			
13. GMAT score	0.16	0.10	0.07	0.15	0.14	0.08	0.12	0.10	0.15	0.10	0.07	0.10	1.00		
14. Gourman rating	0.13	0.10	0.12	0.12	0.15	0.10	0.07	0.09	0.11	0.07	0.06	0.09	0.70	1.00	
15. # Editorial board seats	0.22	0.18	0.19	0.20	0.25	0.20	0.13	0.17	0.24	0.18	0.08	0.13	0.53	0.61	1.00
Mean	0.60	0.82	0.27	0.85	1.28	0.38	1.12	1.86	0.37	0.10	0.04	0.05	625	4.30	2.33
S.D.	1.40	3.40	0.95	1.87	4.46	1.35	2.52	7.22	1.09	0.40	0.20	0.22	39	0.56	3.08

Correlations of 0.08 or greater significant at $p = 0.05$; 0.10 or greater significant at $p = 0.01$

Table 3. Cumulative productivity benchmarks
(a) Publications in MacMillan's (1989) strategy journals

Percentile	Years since degree date										Includes 14 Journals	
	0	1	2	3	4	5	6	7	8	9	10	Journals listed in (b) and (c) as well as <i>Journal of Management Studies</i> , <i>Organizational Dynamics</i> , <i>Journal of Business Strategy</i> , <i>Long Range Planning</i> , <i>Journal of Management</i> , and <i>Interfaces</i>
75th ile	0	0	0	0	1	1	1	1	2	2	2	
90th ile	0	0	1	1	2	2	3	4	4	5	5	
95th ile	1	1	1	2	3	4	5	5	6	7	8	
99th ile	1	2	3	4	5	7	7	9	10	12	14	

(b) Publications in MacMillan's (1989) 'significant quality' strategy journals

Percentile	Years since degree date										Includes 8 journals	
	0	1	2	3	4	5	6	7	8	9	10	Journals listed in (c) as well as <i>Sloan Management Review</i> and <i>California Management Review</i>
75th ile	0	0	0	0	0	1	1	1	1	1	1	
90th ile	0	0	1	1	2	2	3	3	4	4	5	
95th ile	0	1	1	2	3	3	4	5	5	6	7	
99th ile	1	2	2	3	4	5	6	7	8	9	9	

(c) Publications in MacMillan's (1989) 'outstanding quality' strategy journals

Percentile	Years since degree date										Includes 6 journals	
	0	1	2	3	4	5	6	7	8	9	10	<i>Strategic Management Journal</i> , <i>Administrative Science Quarterly</i> , <i>Academy of Management Journal</i> , <i>Management Science</i> , <i>Harvard Business Review</i> , and <i>Academy of Management Review</i>
75th ile	0	0	0	0	0	1	1	1	1	1	1	
90th ile	0	0	1	1	1	2	2	3	3	3	4	
95th ile	0	1	1	2	3	3	4	5	5	5	6	
99th ile	1	2	2	3	3	5	6	7	7	9	9	

(d) Citations to any strategy articles

Percentile	Years since degree date										
	0	1	2	3	4	5	6	7	8	9	10
75th ile	0	0	0	0	0	0	0	0	0	0	1
90th ile	0	0	0	0	1	3	6	9	14	21	21
95th ile	0	0	0	2	6	11	18	23	34	45	52
99th ile	0	2	5	11	22	33	51	70	95	124	151

measured with a single indicator; and ability, measured by lead authorship and A-tier publications. A confirmatory factor model treating our predictor variables as three separate dimensions reported a χ^2 of 28.09, and an RMSR of 0.04, and was a significant improvement over both the null and two dimensional configurations.

There was significant covariance across the three exogenous dimensions. As expected, precocity and ability dimensions covaried more significantly ($\rho = 0.70$, $t = 17.2$) with each other than with prestige ($\rho = 0.10$, 0.11 , and $t = 3.0$ and 3.5 , respectively). This suggests that many PhDs from elite schools do not publish in the first year, and that those who do are exceptional.

Supplementary analyses indicated that there are relatively small differences in the incidence of early publications for graduates of elite vs. other institutions. For example, one set of comparisons used the 90th percentile of Gourman scores as the operational measure of elite institution. Twelve percent of such graduates were early publishers, as compared to 8 percent for the remaining pool. Other measures of prestige reported comparable results. Thus, it would appear that early publication is a relatively rare event for graduates of both elite and non-elite institutions, suggesting that the faculty precocity construct is conceptually and practically independent of graduate school prestige, and, hence, is an appropriate measure of universalism.

Hypothesis tests

Results of the LISREL model are reported in Table 4. Hypothesis 2 stated prestige would be positively linked to research outcomes. Prestige was modeled by the indicators of GMAT scores ($A. = 0.86$, $t = 20.9$), editorial board seats ($A. = 0.78$, $t = 19.2$), and department reputation ($A. =$

1.0). These hypotheses received the least support. Prestige was positively related to publications for years 5 through 9, although the path coefficient was generally of smaller magnitude than for precocity or ability. Additionally, the link to citations was consistently small, and significant only for year 7. None of the paths to citations per article were significant.

Hypothesis 3 stated that universalistic factors (precocity and ability) would have a lesser effect on research outcomes than particularistic factors. However, universalistic factors reported a stronger empirical effect than particularistic factors, thereby challenging the conclusion that the field is at a level of paradigmatic infancy. Precocity was strongly linked to cumulative publications for all six years tested, while the link for citations was not supported. Contrary to expectation, precocity was negatively related to citations per article for all years tested. In summary, precocious authors are more prolific, but tend to write articles that are less influential.

The ability dimension was modeled with two indicators: authorship and A-tier publications. Factor

Table 4. Summary results of longitudinal models

	Years since degree date					
	5	6	7	8	9	10
<i>N</i> for year	771	728	685	644	610	565
<i>Dependent variable: Cumulative publications (η_1)</i>						
<i>Path from:</i>						
Precocity ξ_1	0.35***	0.35***	0.32***	0.39***	0.52***	0.36***
Ability ξ_2	0.21**	0.21**	0.22**	0.11	0.06	0.12
Prestige ξ_3	0.13***	0.14***	0.13**	0.14**	0.13**	0.06
CED	0.31	0.30	0.28	0.26	0.25	0.21
<i>Dependent variable: Cumulative citations (η_2)</i>						
<i>Path from:</i>						
Precocity ξ_1	0.37***	-0.15**	-0.04	0.05	-0.06	-0.06
Ability ξ_2	-0.01	0.28***	0.16**	0.09	0.09	0.18*
Prestige ξ_3	0.03	0.04	0.09*	0.02	0.03	0.02
Publications η_1	0.39***	0.68***	0.63***	0.62***	0.75***	0.70***
CED	0.49	0.60	0.51	0.50	0.61	0.58
<i>Dependent variable: Citations per article (η_3)</i>						
<i>Path from:</i>						
Precocity ξ_1	-0.23***	-0.13**	-0.10⁺	-0.22**	-0.35***	-0.22***
Ability ξ_2	0.40***	0.27***	0.24***	0.33***	0.53***	0.48***
Prestige ξ_3	0.01	0.04	0.01	0.04	0.01	0.04
Publications η_1	-0.30***	-0.31***	-0.28***	-0.05	-0.11*	-0.19***
Citations η_2	0.91***	0.89***	0.83***	0.69***	0.74***	0.66***
CED	0.63	0.59	0.52	0.49	0.52	0.47

⁺ $p = 0.10$; * $p = 0.05$; ** $p = 0.01$; *** $p = 0.001$
Items in **bold** indicate significant universalistic effects.

loadings were 0.76 ($t = 21.5$) and 1.0, respectively. Tests of the universalistic effect of ability also disputed the paradigm development hypothesis. Faculty with strong ability reported a positive link with publications for years 5 through 7, and a link with citations at years 6, 7, and 10. Finally, ability reported a highly significant ($p = 0.001$) link with citations per article for all years tested.

Hypothesis 4 proposed that prolific scholars would be cited more frequently on a per article basis—a particularistic effect. This link was significant for all but year 7, but in a direction contrary to expectation: authors with many publications tended, on average, to write less influential articles. These findings are consistent with the results of Cole and Cole (1971) among hard scientists, and offer supporting evidence on the applicability of universalism to our sample.²

Compared to studies in Table 1, our model explains more of the variance in research outcomes, and does so more efficiently. Prior studies of publication and citation explain, on average, 20 and 28 percent of the variance respectively. In contrast, our design yields an R^2 of 0.28 for publications and 0.50 for citations. These increases in explained variance are accomplished using far fewer predictors: six to seven for our model, compared to as many as 19 in other studies. Two elements of our design would aid future studies: multiple time periods to address temporal instability, and concurrent study of universalism and particularism to address omitted variable problems.

DISCUSSION

The present study extends prior work by shedding new light on the productivity distribution within the field and providing new findings about the role of particularism and universalism in shaping that distribution. Our results also provide further insight into the applicability of Kuhn's paradigm

model for strategy research. Finally, the study also highlights and incorporates several methodological advances.

Determinants of research productivity

Consistent with other fields, we find that many strategy faculty members never publish a single article. Thus, the mantra 'publish or perish' may be applicable for faculty in a research-oriented environment, but not for faculty whose employing institution places a greater emphasis on teaching and service. Future research would benefit from an examination of non-research-oriented outcomes, their benchmark levels, and their determinants.

Some of our most interesting findings center around the role of prestige in affecting research outcomes. While prestige was linked to publication, it was unrelated to cumulative citation or citations per article. This suggests that the particularistic advantage of a prestigious degree is more limited than previously thought. Clearly, prestige facilitates publication success—this is consistent for most of our years sampled, and is actually a stronger result for particularism than reported by Long and colleagues (1998). Since most management journals are blind reviewed, the greatest opportunity for particularism is at the editorial level. So, perhaps in the case of mixed reviews or a borderline decision, author prestige can tip the scales. Given the low publication rate for our sample, even a small number of cases could translate into a significant effect. This conclusion is consistent with Beyer *et al.* (1995), who reported that prestige had a positive effect on the outcome of revise and resubmits, but not on first draft submissions. Additionally, Kerr, Tolliver, and Petree (1977) reported that reputation positively affected reviewer decisions when author identity was known.

Downward mobility and the quality of one's first job may help explain this phenomenon. Most graduates are employed by universities of equal or lower prestige than their doctoral university. Premier institutions, however, don't have an 'upper tier' to recruit from, making graduates of top schools most likely to gain posts at these universities. This scenario may place more pressure on new faculty, as compared to those who took less prestigious posts. In the short run, the slack resources provided by an appointment at an elite school may facilitate publishing more articles early

² Because this finding was contrary to expectations, we ran further tests to see if we had misspecified the functional form of this link. For example, there might be an *increasing* marginal utility of each additional publication relative to one's visibility in the field—i.e., an author receives much greater value from their ninth vs. first publication. We ran nonlinear transformations for both publications and citations, for multiple time horizons, to test this possibility. However, in every case these alternate models reported weaker results than those presented here.

in a career. However, these slack resources will likely be considered in the performance evaluations of these junior faculty. Faculty with strong records are likely to stay, while those with modest records are likely to leave for a less prestigious post. Faced with greater teaching demands and less support for research, this latter group is likely to experience a drop in productivity. The short-term effect of doctoral institution prestige on productivity helps explain the time delay inherent in downward mobility.

While prestige may give faculty an edge regarding publication, this advantage seems to dissipate when it comes to shaping the direction of the field. High-prestige faculty are simply not cited more often, either in aggregate or per article. Since publication success is partially driven by particularism, hiring decisions based on publications may be more particularistic than previously thought. An integrated model containing particularistic and universalistic factors, and both research and career outcomes might help answer this question. As our findings suggest, the inclusion of only a partial set of determinants may lead to misleading results.

Our results also challenge prior work on precocity, and suggest that ability may be a more relevant measure. While precocity has a stronger effect on publications, ability is a much better predictor of both citations and citations per article. Our findings for citations per article demonstrate that persons with more ability not only write more articles, but higher-quality articles as well. Cole and Cole (1971) had reported that perfectionist authors—those who produced relatively few articles—were the most influential in a study of hard scientists. In a similar vein, prolific authors in our sample tended to write papers that were, on average, less influential.

Is strategy an 'immature' field?

Strategic management has many attributes of an immature discipline: weak consensus and relatively low levels of productivity. In contrast, our results cast doubt on the applicability of the paradigm model that emphasizes the importance of particularistic criteria in newer fields. Although absolute levels of research productivity are low, both the creation and utilization of scientific knowledge—i.e., initial publication and subsequent citation of articles—adhere closely to the

normative model of science. Consequently, Pfeffer's (1993) critique of the field appears overly harsh.

There is a clear duality in these findings: although scholars produce less research than in other areas, research outcomes in strategic management are driven more by merit-based than particularistic factors. Correspondingly, strategic management research has the attributes of *both* an advanced and a young discipline. To our knowledge, no other study of paradigm development has reported such differences within a single discipline. Together, these findings echo arguments that consensus is a straw man for the social sciences (Cannella and Paetzold, 1994).

When compared to the hard sciences, management researchers have to confront a number of additional challenges: as a 'professional' school, research questions are generally aimed at applied vs. pure knowledge (Parsons and Platt, 1973). Additionally, practitioner trends play a significant role in shaping lines of inquiry: as executives develop and implement new tools and tactics, researchers must play 'catch-up' to understand this continually changing landscape. As an analogue, how would chemistry research be affected if electrons spontaneously decided to change their patterns of affinity and dislike every several years? At a broader level, research in the hard sciences is typically characterized as increasingly rational—additional tests beget new theories, until evidence gives rise to even newer theories. Implicit in this spiral is that the new theories are better—whether in terms of accuracy, validity, or some other metric—than the ones before. However, in a domain where *our* electrons have free will and the power of social interaction, the expectation of movement towards one right answer may be unwarranted. It is ironic, then, that the notion of increasing rationalization has long been rejected for management practice, yet is still considered desirable for research.

An alternative point of view is that management may be multi-paradigmatic. Ritzer (1975) argues that consensus might not extend across scientific communities of a given discipline. There are several opportunities to explore Ritzer's hypothesis. One starting point would be to replicate this analysis across a number of management subspecialties. Since many of the Academy of Management divisions vary broadly in size and age, we might expect

to see significant differences in consensus across divisions.

Finally, an observation on the emphasis of publication vs. citation is warranted. Our results demonstrate that being a productive scholar does not guarantee that one will be an influential scholar. While citations play a more important role than publications in perceptions of departmental quality (Paxton and Bollen, 2003), publication volume plays a stronger role in areas such as career mobility (Allison and Long, 1987) and faculty pay (Gomez-Mejia and Balkin, 1992). This inconsistency suggests that, if universities intend to reward contributions to knowledge, citations should play a stronger role in the selection and evaluation of faculty.

CONCLUSION

Strategy faculty are, on average, less productive than their peers in other disciplines. While this finding is consistent with Pfeffer's critique regarding the immaturity of management as a field of study, our structural models portray a very different story. Research outcomes for strategy faculty—both publications and citations—are shaped much more by universalistic than particularistic factors. Such a result is the hallmark of a very mature discipline (Kuhn, 1996; Parsons, 1939). So, while strategy scholars may still squabble about theories or methods—the proper tool to quantify diversification, or whether agency theory is the best framework to evaluate corporate boards, for example—the factors leading to the publication and subsequent citation of these articles are consistent with much more established disciplines, such as the hard sciences.

Our results challenge Pfeffer's critique of management as an immature discipline, and question the applicability of Kuhn's paradigm model for social sciences. Overall, it seems appropriate that the answer to the question 'How mature is the strategy paradigm?' is 'It depends.'

ACKNOWLEDGEMENTS

Financial support for this project was generously provided by the Seidman Research Institute at Arizona State University and the Amos Tuck School, Dartmouth College. Data support was

provided by Sherry Burlingame, Otto Carroll, Dave Loney, Sandy Rogers, Christine Cress at the Higher Education Research Institute, and Tuck reference librarians. Thanks also to Diana Deadrick, John Prescott, and Ken G. Smith for their comments on previous drafts.

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