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Incompatible Assumptions: Barriers to producing multidisciplinary knowledge in communities of scholarship

Corinne Bendersky
Kathleen L. McGinn

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Corinne Bendersky, University of California, Los Angeles

Anderson School of Management

110 Westwood Plaza, A418, Los Angeles, CA 90095-1481

Phone: 310-825-1366

Fax: 310-825-0218

Email: cbenders@anderson.ucla.edu

Kathleen L. McGinn, Harvard University[1]

Harvard Business School, Baker Library 473, Boston, MA 02163

Phone: 617-495-6901

Fax: 617-495-5672

Email: kmcginn@hbs.edu

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Abstract

Co-locating knowledge workers from different disciplines may be a necessary but insufficient step to generating multidisciplinary knowledge. We explore the role of assumptions underlying knowledge creation within the field of organizational studies, and investigate how incompatible assumptions across subgroups may inhibit the generation of multidisciplinary knowledge. While organizational studies research commonly assumes dynamic open systems with recursive influence between environments and interactions, studies of micro-processes in organizations often assume implicitly that interactions among organizational members are closed systems. We suggest that this incompatibility between assumptions may inhibit knowledge sharing in organizational studies research. We empirically assess this assertion by analyzing studies of negotiation published in top peer-reviewed management, psychology, sociology, and industrial relations journals from 1990 to 2005. Our findings illuminate a continuum of open-systems to closed-systems assumptions underlying this micro-process research. Analysis of the rate of citation of the articles in our data set by non-negotiation organizational studies research reveals that open systems assumptions increase the likelihood that a negotiation article will be cited in organizational studies, after controlling for other known effects on citation rate, such as outlet, discipline, length, number of citations and methodology. Our findings suggest that multidisciplinary fields can enhance their knowledge sharing by attending to the compatibility of assumptions held by sub-groups within the field.

Knowledge workers pursue the production and dissemination of knowledge itself. Just as flows of knowledge within and across communities of practice improve the quality of new products (1991; Dougherty 1992; Kellogg et al. 2006; Wheelwright and Clark 1992), knowledge sharing among knowledge workers within interdisciplinary communities may be critical for new discoveries and more comprehensive and accurate understanding of phenomena (Dauphinee and Martin 2000; Kilduff and Kelemen 2001). In spite of this, biologists tend to talk to biologists, economists tend to talk to economists, and lawyers tend to talk to lawyers. Co-locating knowledge workers from different fields in interdisciplinary groups may be a necessary but insufficient step to generating the desired multidisciplinary work (Grant 1996). Consulting firms tout their cross-disciplinary workers and the free-flow of information and ideas, but even in these arenas, organizational structures and politicized practices facilitate within-discipline communication and constrain cross-discipline communication (Anand et al. 2007; Augier et al. 2005). Scholars trained in psychology, sociology, economics, and operations are

brought together in business schools to improve understanding of issues of importance to organizations, but interaction across disciplines is limited by departmental structures and participation in discipline-based academic societies (Dauphinee and Martin 2000; Pieters and Baumgartner 2002). The generation of multidisciplinary knowledge – knowledge that is informed by multiple perspectives on studying and understanding phenomena – is potentially hampered by idiosyncratic representational, definitional and political knowledge practices that develop within subsets of communities of practice (Carlile 2002; 2004).

In this paper, we argue that producing and disseminating knowledge within a multidisciplinary community of practice is enhanced when knowledge workers hold compatible assumptions, even when the form and content of knowledge generation across those workers varies. We focus on communities of scholarship, communities of practice that produce knowledge itself rather than tangible objects reflecting that knowledge. Communities of scholarship are characterized by what Fleck (1979) described as distinct "thought worlds." Thought worlds have particular "funds of knowledge" – what is known – and "systems of meaning" – how they know, which generate understandings of or underlying assumptions about the meaning of the phenomenon itself (Dougherty 1992). Furthermore, knowledge is situated; that is, knowledge is embedded in specific contexts and social practices (Bradbury and Lichtenstein 2000; Brown and Duguid 2001; Cook and Brown 1999; Lave and Wenger 1991; Nonaka and Takeuchi 1995; Osterlund and Carlile 2005). This implies that interactions within a community are likely to generate common understandings of phenomena and mutually influence knowledge (Carlile 2002; Dougherty 1992). Thus, communities of scholarship develop distinctive interpretive schema, which are cognitive maps comprised of shared fundamental assumptions that help bring members together with a shared identity (Bartunek 1984; Pfeffer 1981; Ranson et al. 1980).

Within a community of scholarship, interpretive barriers to sharing knowledge arise when sub-groups hold contrary assumptions about the appropriate questions to be asked or the fundamental nature of the phenomenon under investigation. Incompatible assumptions may lead to divergent paths of inquiry that are hard to reconcile after-the-fact. When differences in assumptions evolve between subgroups within an interdisciplinary community of scholarship, integrating knowledge across the community may

require more than co-location (Anand et al. 2007; Dougherty 1992). Sharing knowledge across boundaries is facilitated by interactions around physical products, or "boundary objects" (Bechky 2003a, b; Carlile 2002). Kellogg, Orlikowski and Yates (2006), however, raised the question of whether boundary objects can ease knowledge sharing outside traditional, hierarchical organizational structures. We take their critique one step further to ask how interpretive barriers can be overcome when there is no object *per se* to share. Within interdisciplinary communities of scholarship, cross-discipline understanding may stem from sharing the foundations of the knowledge itself. That is, the potential for members to recognize the relevance of others' findings to their own scholarship may depend on shared assumptions regarding the fundamental nature of the phenomena under investigation.

The community of scholarship we study falls under the broad rubric of organizational studies, a large, interdisciplinary academic field focusing on knowledge about organizations that is also sometimes referred to as "management studies" (Blackburn and Michell 1981). Because organizations are multi-level and multi-faceted, many disciplines contribute to organizational studies, including psychology, sociology, economics, political science, anthropology and industrial relations. This diversity, while a notable feature across studies of organizational phenomena, is seldom in evidence within studies (Blackburn and Michell 1981; Salancik 1986). Biehl and his colleagues (2006), in a study of citation patters across business disciplines, found that scholars studying organizations tended to publish within a discipline, and that there was little cross-discipline citation. The result is a singular emphasis on either micro or macro processes (Augier et al. 2005; Pfeffer and Sutton 2000), leading to calls for looking at phenomena across levels of analysis (Cappelli and Sherer 1991) and increasing the focus on behavior that is central to organizing rather than focusing only on behavior or only on organizations (Heath and Sitkin 2001).

We, therefore, study the effects of assumptions in micro-process research on knowledge sharing within the organizational studies community of scholarship. We focus on negotiation as a critical micro-process in organizations. Research on negotiations has generated a host of illuminating findings regarding individuals' behaviors and limitations as independent and interdependent decision makers. It has also led to practicable prescriptions for reaching agreements in the face of mixed-motive interactions, those in

which different parties involved in the interaction have conflicting and complementary preferences regarding outcomes (Schelling 1960). Applications as diverse as U. S. telecommunications policies (Cramton 1998) and dispute resolution on ebay (Nadler 2001) reflect the advances in knowledge generated by negotiation research. In spite of these advances and in spite of the ubiquitous nature of negotiations within organizations (Follett 1918; Pondy 1967), negotiation research has been criticized for its isolation from mainstream organizational studies (Pfeffer 1997). Organizational studies scholars have attributed to negotiations and exchange processes an essential role in the maintenance, adaptation, and management of organizations (Ranson et al. 1980; Scott 1992; Thompson 2003), but some have also lamented the a-contextual nature of negotiation research, arguing that this precludes the application of its findings into organizational studies research (Barley 1991; Kolb and Bartunek 1992; Kramer 1991). We posit that negotiation research is disconnected from organizational studies research due to fundamental differences in underlying assumptions regarding the nature of micro-processes within organizations.

To systematically asses this proposition, we review the empirical negotiation studies published in top peer-reviewed management, psychology, sociology and industrial relations journals from 1990 to 2005, analyze the content of each study to qualitatively extract underlying assumptions and trace the articles' citations across organizational research. Citations, while not a perfect measure of knowledge sharing, offer a measurable "footprint" of the evolution of scientific knowledge (Judge et al. 2007). Our qualitative analyses illuminate a range of open to closed systems assumptions underlying studies of negotiation published over the fifteen year period. Our quantitative analyses show that the open to closed systems nature of assumptions in studies of negotiation reliably predicts citation rates in non-negotiation organizational studies research. We conclude by discussing the broader effects of shared and incompatible assumptions on knowledge integration.

OPEN AND CLOSED SYSTEMS ASSUMPTIONS ABOUT NEGOTIATIONS

James D. Thomson, in his seminal book on *Organizations in Action* stated that communication among the disciplines involved in the study of organizations "resembles more of a trickle than a torrent" (Thompson 1967: 3). Thompson argued that scholars diverged in their approaches to studying

organizational questions. One group, studying micro-processes, administrative efficiency and bureaucracy from a rational model, assumed that processes within organizations were closed systems. The other group, studying organizations from a natural systems model, assumed that organizations and the processes that comprise them were open, interdependent systems of input, transformation, and output. Thompson argued that these divergent assumptions shaped the way scholars studied their questions of interest, and affected the discourse within the study of organizations. Forty years later, although the community of organizational studies scholars has become more coherent and institutionalized, there continues to be distinct micro – and macro – process orientations that draw from different disciplinary bases and speak to different audiences (Augier et al. 2005).

Nearly simultaneously with Thompson, Katz and Kahn, in their treatise on *The Social Psychology of Organizations* (1966), advocated an open systems approach to the study of interpersonal processes within organizations. In their formulation, organizational structure is constituted from interaction and events, and held together by roles, norms, and values. Katz and Kahn's, Thompson's as well as later work by Scott (1992) and others that followed, pushed scholars to adopt open systems assumptions in their study of organizations.

From an open systems perspective, negotiation processes in organizations are inseparable from the organizational environment in which they take place and are integral parts of the recursive cycle of interactions from which organizational structures rise. This assumption of connectedness has been carried unevenly into research on negotiations. In the beginning of the 20th century, Mary Parker Follett (1918) set the stage for both organizational theory and negotiation research (Fox 1968). She illuminated varied and conflicting motives among factions in organizations, highlighted the importance of coalitions and the social nature of authority, and identified the necessity of interdependent decision making in the face of these organizational realities. Follett saw negotiations as a necessary vehicle for resolving the inevitable conflicts that arise in organizations. Nearly fifty years later, Walton and McKersie led negotiation research into the mainstream of organizational studies with *A Behavioral Theory of Labor Negotiations* (1965). Referring to their own case study in industrial relations, as well as work in the burgeoning fields

of game theory, behavioral decision theory, and social psychology, they exposed four interrelated sub-processes of negotiations: integrative bargaining, distributive bargaining, attitudinal structuring, and intra-party bargaining (Walton and McKersie 1965). Their work established integration and distribution as essential elements of all negotiations and core tenets of negotiation research. Attitudinal structuring and intra-party bargaining focused on interactions between negotiators and their audiences and constituencies. Walton and McKersie provided evidence that actors within one party often have conflicting preferences regarding process and outcome, requiring multiple levels of negotiations. Their theory of bargaining rests on the recognition that negotiators bargain in the shadow of a complex social system.

Research following Walton and McKersie added dimensions to the nature of negotiations in organizations. Theories of structuration (Giddens 1986) and negotiated order (Strauss 1978) detailed how social systems are constructed through contextualized interactions. Social structures, as both "the medium and the outcome" of social interactions (Orlikowski and Yates 1994: 541), influence "how people communicate, enact power and determine what behaviors to sanction and reward" (Barley and Tolbert 1997: 96). According to Strauss and his colleagues, social order is an ephemeral arrangement that is continuously evolving as negotiated agreements are reconstituted through daily interactions (Blumer 1969; Fine 1984; Maines 1977; Strauss 1978; Strauss et al. 1963). Studies coming out of labor relations and sociology tended to follow in this vein, studying negotiations as dynamic, open systems with recursive influence between environments and interactions (e.g., Friedman and Poldony 1992; Kochan and Rubinstein 2000; Kolb and Bartunek 1992; Morrill 1991).

Walton and McKersie's concepts of integration and distribution rose to the forefront in negotiation research carried out in social psychology and behavioral game theory. These fields adopted a closed systems approach, emphasizing discreet negotiation processes and outcomes (e.g., Galinsky et al. 2005; Kray et al. 2005; White et al. 1994). The emphasis on one-shot bargaining, measurable payoffs, and at-the-table interaction was amenable to laboratory studies, leading to a quickly growing field of negotiation research investigating bargaining as a generic form of interaction. Intra-party bargaining and attitudinal structuring — attending to indirect effects from and on audiences, alliances and constituencies

away from the table — fell by the wayside (Lax and Sebenius 2006). This approach led to ready application into market settings, but critics asserted that the negotiation field was increasingly detached from organizational studies (Barley 1991).

HYPOTHESES

The different approaches to negotiation rest on different implicit assumptions about the critical features of negotiations. Specifically, negotiation studies appear to vary in their assumptions about: 1) *Who* is involved in and affected by the negotiation and the relationships among these actors; 2) *What* issues are negotiated and what is affected by negotiation processes and outcomes; and 3) *When* the negotiation takes place. Our proposition is that knowledge sharing from negotiation research to the larger community of organizational scholarship will reflect the compatibility of each study's assumptions with the open systems assumptions underlying much of the research in organizational studies. We will formalize hypotheses regarding specific effects of who, what and when assumptions below, however, we will also inductively enrich the descriptions of open and closed system assumptions about negotiations from our qualitative analyses.

Assumptions about "Who"

From an open systems perspective, negotiators are inextricably embedded in a network of relationships. Multiple features of these ties, such as relationship type, strength, and valence play themselves out in exchange interactions (Morrill 1991). Hierarchical and status relationships, for example, have been shown to have measurable effects on interaction processes and outcomes (Barley 1991; Berger et al. 1980; Pratt and Rafaeli 2001; Svensson 1996; Thye 2000). Due to embeddedness, negotiations are influenced by and affect not only those parties sitting at the table, but also others whose interests are only indirectly represented in the negotiation (Bendersky 2007; Krackhardt 1999). The mere possibility of forming a coalition away from the table may be enough to influence at-the-table negotiating behavior even if the allies are never mobilized (Baumgartner et al. 1975; Morrill 1995; Schmidt and Kochan 1972). We propose that organizational studies will be more likely to incorporate findings from

negotiation studies when the research designs are attentive to relationships both within and beyond the parties directly involved in the negotiation. Formally:

> HYPOTHESIS 1(H1): *Negotiation articles exhibiting open systems assumptions regarding negotiators' direct and indirect relationships will be cited more frequently in organizational research than negotiation articles exhibiting closed systems assumptions regarding negotiators' relationships.*

Assumptions about "What"

An open systems view assumes that organizational structure is both "constituted and constitutive," created and altered over time by ongoing interaction among members (Ranson et al. 1980). In this sense, the important outcomes of negotiations within organizations include not just the economic payoffs to the parties directly involved in the negotiation, but also the effects of the interaction on organizational structures, rules, beliefs, and practices (Pratt and Rafaeli 2001), as well as symbolic resources such as legitimacy, trust, reputation, identity, esteem, respect and status (Morrill 1995; Zhou 2005). Disputes over symbolic resources may generate bargaining behaviors that appear suboptimal when considering material resources alone (Maines and Charlton 1985). Hambrick and Cannella (1993), for example, show that strategic and economic models cannot explain why favorable retention packages do not keep executives from resigning after their companies are acquired. Their study suggests that these decisions, as costly as they are in economic terms, are motivated by the executives' losses in social status following acquisition negotiations. This view of the "what" of negotiations within organizations suggests that negotiation research will be more readily incorporated into organizational studies if the outcomes considered in the research go beyond the circumscribed negotiation process and objective payoffs to the parties at the table. Formally,

> HYPOTHESIS 2 (H2): *Negotiation articles exhibiting open systems assumptions regarding the measured outcomes of negotiations will be cited more frequently in organizational research than negotiation articles exhibiting closed systems assumptions regarding negotiation outcomes.*

Assumptions about "When"

Open systems theory implies that negotiations in and across organizations reflect a history of past interactions and an expectation of future interactions (Raven 1993). Realization of the long term, recursive effects of negotiations may feed into individuals' strategies and give rise to different bargaining approaches at different points in time (Fligstein 1987). Westphal and Khanna (2003), for instance, demonstrate how directors who support changes instituting greater board control over management action and compensation are subjected to informal sanctioning by directors on other boards. Directors who experience such social control are deterred from participating subsequently in governance changes that threaten the interests of fellow top managers. Open systems views of negotiation take such linkages for granted, assuming that multiple negotiations are ongoing in organizations, and that episodes of intense negotiation are temporally tied, recursive events (Barley 1991; Fine 1984; Kolb and Bartunek 1992; Morrill 1991). We propose that negotiation research will be more closely aligned with organizational studies when the negotiation studies reflect temporal interdependence across negotiation episodes. Formally,

> HYPOTHESIS 3 (H3): *Negotiation articles exhibiting open systems assumptions regarding when negotiations take place will be cited more frequently in organizational research than negotiation articles exhibiting closed systems assumptions regarding negotiation timing.*

METHODS AND RESULTS

We collected a broad set of peer-reviewed empirical studies of negotiation published between 1990 and 2005 in top-tier organizational behavior (OB), psychology, industrial relations (IR) and sociology journals. Using this data base, we conducted our analyses in three steps: 1) content coding of the who, what, and when of negotiations implied by the design of each study; 2) qualitative analyses to inductively derive specific measures of open and closed systems assumptions regarding negotiations; and 3) citation analyses assessing the relationship between open and closed systems assumptions and each negotiation article's frequency of citation in non-negotiation organizational studies research.

Articles Reviewed

We attempted to include all empirical studies of negotiation published in top tier, peer-reviewed OB, psychology, IR and sociology journals between 1990 and 2005.[1] We limited our search to "top tier" journals based on Starbuck's ranking of business-related journals.[2] This resulted in a review of negotiation research published in three OB journals (*Academy of Management Journal (AMJ); Administrative Science Quarterly (ASQ);* and *Organization Science (OS)*), five psychology journals (*Journal of Applied Psychology (JAP); Journal of Experimental Social Psychology (JESP); Journal of Personality and Social Psychology (JPSP); Organizational Behavior and Human Decision Processes (OBHDP);* and *Personality and Social Psychology Bulletin (PSPB)*),[3] one IR journal (*Industrial and Labor Relations Review (ILRR)*), and two sociology journals (*American Journal of Sociology (AJS);* and *American Sociological Review (ASR)*).

Using Business Source Complete, Science Direct, and Springer Link database search engines, limiting our search to the journals noted above, we conducted a Boolean search for articles with any of the terms "negotiat"[4], "bargain", or "conflict" in search terms, titles, keywords, or abstracts. We then dropped all articles with the following characteristics: review or theory not accompanied by an empirical study; studies focused on the efficacy of a specific negotiation software package; and research exploring negotiations in a specific context outside of formal organizations, such as international treaties, sexual aggression, or family conflict. To refine the list further, we adopted Walton and McKersie's broad definition of negotiation: "interaction of two or more complex social units which are attempting to define or redefine the terms of their interdependence" (1965: 3). Using this definition as a guide, the authors read through the abstract of each article. We discussed and deleted articles not relating to negotiations between "social units." We dropped studies employing only computer simulations of negotiations, but we retained

[1] At the time of data collection, articles published before 1990 were not consistently available on line. This is changing rapidly and all past research is likely to be available on line at some point. In addition, citation data is constantly being updated. Our counts were finalized on May 20, 2007. We counted citations in articles published prior to January, 2007.
[2] Rankings by average annualized citations per article, estimated in 2004. Available at <http://pages.stern.nyu.edu/~wstarbuc/cites.htm>. Accessed January 29, 2007.
[3] Following Biehl et al. (2006), we break this group into two segments for our quantitative analyses.
[4] Searching for the root, "negotiat" captured all forms, including negotiate, negotiation, negotiations, negotiator and negotiators.

studies in which at least one of the parties was a human negotiating with a computer-simulated counterpart(s). We deleted research on identity negotiation if the work referred to an intrapersonal, psychological process only, without reference to interaction between two or more parties (e.g., McNulty and Swann 1994). Studies of team decision making were dropped if there was no mixed motive component, i.e., if all individuals in the group had the same interests and incentives and the terms of the interdependence focused all of the parties on making optimal decisions for the group (e.g., Choi and Kim 1999). We also excluded research on organizational or group conflict if negotiation was not an explicit facet of or variable in the studies. For example, Jehn's conflict typology studies (Jehn 1995, 1997) were excluded, since they investigate the performance effects of different types of group conflict but do not explore the micro-processes involved in the management of those conflicts. The final set included 225 empirical negotiation articles. Short citations of the articles included in the review, along with indicators of the most highly cited article from each journal in our sample, are presented in Table 1.

Insert Table 1 Here

Coding

We assessed the content of the articles, focusing on design, measures and analyses, to inductively determine underlying assumptions represented in the empirical negotiation research. We iteratively developed codes for the who, what and when of negotiations within each article. As a first step, the authors together read through a subset of articles and developed an initial set of codes. We looked for distinctions on each who, what and when dimension, expanding the codes in each dimension as new categories presented themselves in the studies. We continued to read abstracts and add to the coding set until no more categories were needed to capture the specifics described in the articles. When we reached this point of saturation, we agreed on an initial protocol defining each code. Next, each author independently coded all of the articles based on the abstracts. We used multiple codes as needed to reflect multiple dimensions of who, what or when within a single study or across multiple studies in a single article. When an abstract did not contain enough information to discern one or more of the codes, we perused the body of the article. Throughout this step, we continued to refine our coding protocol as we

became more familiar with the research. When this process was complete, we compared each of the codes on every article. At this point, our agreement rate on all codes was 77%. We discussed each disagreement and mutually agreed on a final coding protocol.

For "who", we coded the nature of the actual relationship between the parties involved in the focal negotiation described in each article: strangers; classmates; ongoing interpersonal relationship except for being classmates; hierarchical relationship; and shared membership in a collective such as a union or a social network (excluding classroom). Each study could have multiple codes. For example, a study collecting data from negotiations between students in a class allocated into pairs based on measures of ongoing interpersonal relationships would be coded for both classmates and interpersonal relationship. In addition, we coded whether or not coalitions were possible within the focal negotiation. For "what," we coded the nature of the outcome measures based on the dependent variables: tangible outcomes (e.g., points or money); perceptions of outcomes; process measures/issues; levels of or changes in power or status; measures or issues of trust; and expectations or explicit measures of future relationships. The majority of studies (86%) described effects on tangible outcomes, often in addition to other outcome measures. We also coded whether or not the study considered effects or outcomes outside the focal negotiation, such as on top management structures (e.g., Morrill 1991). For "when," we coded the temporal aspect of the negotiation: one-shot; one-shot with distinct phases; multiple rounds of the same negotiation, or recursive (i.e., multiple, separate negotiations affecting one another over time).

To determine the final codes, the articles were evenly split across the authors, based on alphabetical order of article authorship. We read the text of each article to confirm the coding derived in the previous step and discussed any changes together. Percentages of articles receiving each code are presented in Table 2.

Insert Table 2 Here

Qualitative results

Based on our coding of who, what, and when in each study, we iterated back and forth between our data and definitions presented in the organizational literature to develop broad conceptualizations of open

and closed systems assumptions in negotiation research and to categorize our codes into these assumptions. Table 3 summarizes the general features of open and closed systems assumptions induced through this process, and Table 4 lists the codes assigned to each set of assumptions.

Insert Tables 3 and 4 Here

Closed systems assumptions. Closed systems "who" design choices imply a belief that the actual relationships between subjects will not distort their negotiation processes or outcomes. Choosing to use strangers or class participants in fictional negotiation scenarios, for example, suggests an unstated assumption that negotiators are independent from others away from the table and from the larger social and historical context in which negotiations occurs. Alliances at and away from the bargaining table are considered to be a specific and proscribed variation of negotiations, not a core feature central to negotiation processes and outcomes. Closed systems "what" design choices point to an assumption that the most important outcomes from negotiations have to do with the short term distribution of tangible resources, not symbolic resources or the long term effects of the process or outcome on factors or people outside the focal negotiation. For example, although many studies measured more than the amount of points or money that was exchanged, most of the additionally measured variables were participant's perceptions of the quality or fairness of the process or outcomes of the negotiation (e.g., Thompson and Loewenstein 1992). Closed systems "when" design choices suggest that other processes, conflicts, or negotiations occurring before, during, or after the focal negotiation are immaterial to the negotiation at hand; negotiations are discrete events, happening outside the routine of daily life. For example, many of the one-shot studies were conducted in classrooms, but few mentioned that negotiations had been experienced in the course prior to data collection, and those that did simply noted the point in the course during which the data were collected (e.g., White and Neale 1994).

Open systems assumptions. Open systems design choices regarding "who" suggest an assumption that negotiations are influenced by and affect not only those parties sitting at the table, but also others whose interests are only indirectly represented in the negotiation. Interpersonal networks, actual relationships as well as status and power hierarchies, are anticipated to have meaningful effects on the

negotiation. In this way, negotiators' social embeddedness constrains their behavior while opening up strategic opportunities within bargaining. "What" choices that reflect open systems perspectives allow negotiations to affect structures, rules, beliefs, and practices away from the bargaining table, and measure symbolic resources such as legitimacy, reputation, identity, honor, esteem, respect and status. Open systems "when" choices imply that past (dis)agreements bear on the present negotiation. Studies revealing an open systems perspective about when negotiations occur take temporal linkages for granted by studying negotiations over time or multiple, recursive events.

Hybrid assumptions. A substantial number of papers adopt a mix of open and closed systems assumptions. Some articles, for example, adopted an open systems assumption that negotiations take place between socially embedded parties, while retaining closed systems assumptions on other dimensions. In one, Tenbrusel and her colleagues ran a classroom experiment simulating supplier market conditions (Tenbrunsel et al. 1999). The study retained closed systems assumptions in all categories, with the exception of measuring the actual personal relationships between students acting as buyers and sellers.

Quantitative analyses

To test the effect of open and closed systems assumptions on knowledge sharing within organizational studies research, we collected data on the citation counts of the 225 negotiation articles in our data set. None of the articles published in 2005 had any record of citations in ISI-SSCI when we finalized the citation count as of May 20, 2007, so we dropped that year's articles from the data set we used for the quantitative analyses. For the remaining 212 articles, we collected data through the ISI-SSCI[5] on citations within articles published in the 71 journals identified as management journals by ISI, excluding 14 journals narrowly focused on decision making and negotiations, operations and technology, marketing, or engineering.[6] We dropped all author self-citations and all citations within from our

[5] Accessed through http://scientific.thomson.com/webofknowledge/, Web of Science Database. The database includes: Science Citation Index Expanded; Social Science Citation Index; and Arts & Humanities Citation Index.

[6] We excluded *Decision Sciences, Group Decision & Negotiation, IEEE Transactions on Engineering Management, Information Systems Research, International Journal of Operations and Production, International Marketing Management, International Journal of Technology Management, Journal of Information Technology, Journal of Management Information Systems, Journal of Operations Management, Journal of the Operational Research Society, MIS Quarterly, Negotiation Journal,* and *Technovation*

negotiation sample. The final citation count in management articles was our primary dependent variable (mgmt cites).

Because our dependent variable is a count of citations over a maximum of 17 years (the earliest articles were published in 1990 and citation data were collected in 2007), we estimate our models with negative binomial maximum-likelihood regressions (Stremersch et al. 2007). A negative binomial regression assumes the dependent variable is an over-dispersed count variable (i.e., the variance is very high relative to the mean and the distribution is truncated at zero), and corrects for varying lengths of exposure time across observations. In our model, the exposure time is number of years since publication.

Model 1 tests the effects of a set of control variables suggested by past research on citation rates in organizational studies (Biehl et al. 2006; Blackburn and Michell 1981; Judge et al. 2007; Stremersch et al. 2007). We control for methodology using dummy variables reflecting each article's methodology: laboratory experiment, ethnography or field study (omitted dummy). To control for the higher likelihood of within-discipline knowledge sharing, we include dummy variables based the journal discipline and Biehl et al.'s (Biehl et al. 2006) sociometric analyses identifying citation cliques in business journals (see also Salancik 1986). Thus, we include dummy variables for industrial relations (ILRR), sociology (ASR, AJS), social psychology (JESP, PSPB, JPSP), organizational psychology (JAP, OBHDP), and management (AMJ, ASQ, OS) (omitted dummy). Past research has shown that citation is reciprocal: a greater number of citations within an article leads to a greater likelihood of citation of that article (Gilbert 1977; Judge et al. 2007). To control for this, we include a count of within-article citations. Similarly, we control for number of pages in each article because past research has found this to be predictive of citation rate (Stremersch et al. 2007). Following Judge et al. (2007), who found that the average citation rate of the journal publishing the article was the single best predictor of citation rates, we control for average citation rate of the journal in which the article was published based on Starbuck's 2004[7] analysis and call this variable "journal prestige."

[7] Average annualized citations per article, estimated in 2004, available at <http://pages.stern.nyu.edu/~wstarbuc/cites.htm>.

We add our independent variables to the controls in Model 2. The variables of interest are the three sets of open and closed systems variables (who_open, what_open and when_open), described above and detailed in Table 4. Who_open equals zero if a study employed students or strangers as research subjects without consideration of their interpersonal relationships and did not measure coalitions; it equals one if a study either measured the actual relationship between the parties *or* considered coalition potential; and it equals two if it considered both the parties' relationship *and* coalition potential. What_open equals zero if the dependent variable(s) measured only the immediate outcomes of material resources exchanges and/or negotiator perceptions of outcome or process; what_open equals one if any other combination of dependent variables was considered *or* the study examined the effects of the negotiation on the larger organization or environment; what_open equals two if the dependent variables included any other combination of measures *and* the analyses considered effects on factors external to the negotiation. When_open equals zero for articles in which negotiations were one-shot; it equals one when the study considered phases, multiple rounds, or recursive effects of one negotiation on another.

Insert Tables 5 and 6 About Here

Quantitative results

Means and correlations are presented in Table 5. The three open systems variables were significantly and positively related to the rate of citations in management articles. To assess the shape of this relationship, we examined the means for each open systems category. The means of aggregate citation counts and annualized citation counts (e.g., the citation counts divided by the number of years since the paper was published), presented in Table 6, suggest the predicted positive, linear effect for open systems assumptions. Table 7 presents the results of the negative binomial regressions, with the coefficients transformed to incidence-rate ratios (IRR), i.e., exp(b) rather than b. Incident rate ratios indicate the estimated change in the response ratio, in this case the annual citation rate (mgmt cites), for each one unit increase in the independent variable, holding all other variables constant. An IRR of 1.0 signifies no change in the response variable. An IRR below 1.0 signifies a decrease in the response variable, e.g., IRR = .50 would signify a 50 percent decrease in the annual management citation rate for

each unit increase in the independent variable. An IRR above 1.0 signifies a corresponding increase in the response variable.

Insert Table 7 About Here

Model 1 results show significant effects in the directions shown in past research for journal type, journal prestige and the number of citations in the focal article. The IRR for number of citations, for example (IRR = 1.02, s.e. = .006), indicates that an increase of one additional citation in the focal article increases the annual rate of citations in management journals by two percent. Methodology and number of pages did not have significant effects on citations. These effects remain in Model 2 adding the open systems assumptions variables, but journal prestige falls below standard significance levels. The IRRs for what_open and when_open are greater than 1.0 and significant, indicating a positive effect on citation rates. Relative to negotiation articles with fully closed systems dependent variables (e.g., tangible payoffs only) for example, articles with open systems dependent variables (e.g., changes in status or power subsequent to the negotiation) had a 43 percent higher annual citation rate in management research, holding all other variables constant. Similarly, negotiation research exploring negotiations that extended beyond one-shot interactions increased their annual citation rate in management research by 58 percent relative to negotiation articles studying only one-shot interactions, again holding all other variables constant.

The coefficient for who_open did not reach standard significance levels. Though the pairwise correlation between who_open and management citations was positive and significant, this relationship is negative and no longer significant after controlling for method, journal, number of citations, number of pages and journal prestige. This reduction in effect may be due to the high correlation between methodologies and the nature of the subjects involved in the research. To check for problems of multicollinearity, we ran the negative binomial regression without methodology and the effect does not change. Since we cannot examine variance inflation factors (VIF) within negative binomial regression analyses, we conducted OLS regression on annualized citation counts with all of our variables to assess potential multicollinearity. The mean VIF was 2.34, with a maximum of 5.11 for our organizational

psychology journal category. The VIFs for our three open systems variables were all less than 3. We concluded that multicollinearity does not seem to be a problem in our analyses.

To test if our results might be driven by the overrepresentation of *OBHDP* in our sample, we ran our negative binomial regression analyses excluding the 80[8] *OBHDP* observations (38 percent of the larger sample). The overall pattern of results did not change. The effects of our control variables were in the same direction and significance level except for number of pages, which dropped below standard significance levels when *OBHDP* was excluded. The direction of effects of our three independent variables remained constant, though the coefficient for when_open dropped in significance with the smaller samples size (IRR = 1.38, p = .21).

DISCUSSION AND CONCLUSIONS

Our investigation of negotiation articles published between 1990 and 2005 revealed that closed systems assumptions about micro-processes limited the citation of negotiation research by non-negotiations organizational studies research published in management journals. Although closed systems assumptions may allow easy generalization to different kinds of generic negotiated interactions, they lie in stark contrast to the situated interpretation of negotiations as central mechanisms in the process of organizational structuring (Katz and Kahn 1966; Ranson et al. 1980; Strauss 1978). Studies embodying open systems assumptions, particularly those regarding what is negotiated, the impact of the negotiation on the broader organizational system and when the negotiation takes place, are more readily accessible to the broader field of organizational studies than are those that rest on closed systems assumptions. These results are consistent with observations that other research that has bridged micro-interactions and macro-organizing processes, such as status construction theory (Ridgeway and Balkwell 1997; Ridgeway and Erickson 2000), has been broadly influential (Stolte et al. 2001). Thus, knowledge sharing reflects the compatibility of assumptions between micro-process research and organizational studies.

Citations are not a perfect measure of intellectual influence; one can be influenced by another's knowledge without actually citing it, thus making citations a conservative measure of intellectual

[8] Note that three papers from 2005 were already excluded.

influence. Another potential metric of influence, for instance, is the incorporation of assumptions or research designs in subsequent studies. If the open systems assumptions were influencing negotiation research in this way rather than through direct citations, however, we would expect to see open systems assumptions represented more prevalently in the micro-process negotiation research designs within our sample than we do. Despite their limitations, citations are a quantifiable measure of when knowledge is being shared that offers an observable "footprint" of the evolution of scientific knowledge with substantial implications for institutions and individuals (Judge, et al., 2007). Thus, we, like other scholars who have utilized similar data (e.g., Biehl et al. 2006; Blackburn and Michell 1981; Judge et al. 2007; Stremersch et al. 2007) believe that they provide an accurate, if conservative, picture of the influence of scientific knowledge.

It is plausible that the differences we observe arise from the focal questions or research topics, rather than the open or closed systems assumptions of a paper. Yet there is some evidence in our sample that the same topic, such as the role of trust in negotiations, has been studied at times with both largely open systems assumptions (e.g., Robinson 1996; Zaheer et al. 1998) and at other times with predominantly closed systems assumptions (e.g., De Dreu et al. 1998; Olekalns and Smith 2005). With a large enough sample, future research could do a matched-case comparison analysis to disentangle the effects of research topic from underlying assumptions.

Our qualitative exploration identified numerous studies that utilized a mixture of open and closed systems assumptions. By revealing how negotiation research can be rigorous and situated, both parsimonious and accessible to organizational scholars, these studies illustrate how compatible assumptions help establish a shared language and facilitate joint knowledge transformation. In this way, assumptions may function like boundary objects, "flexible epistemic artifacts that inhabit several intersecting social worlds and satisfy the information requirements of each of them" (Bechky 2003b: 326; Star and Griesemer 1989: 393). Carlile (2002) describes characteristics of effective boundary objects that can be used to span different communities in product development. 1) They establish a shared language for representing information, 2) they offer a concrete means for individuals to specify and learn about

their differences and dependencies, and 3) they facilitate a process in which individuals can jointly transform their knowledge. Although most of the research on the use of boundary objects emphasizes tangible artifacts, in a context where knowledge itself is the product and there are few tangible objects to share, the most effective boundary spanning objects may be the assumptions underlying the production of knowledge.

Generating multidisciplinary knowledge may require communities of scholarship to acknowledge the presence and limitations of their assumptions. Research on product development suggests that effective boundary objects explicate the differences and dependencies across boundaries (Bechky 2003b). Assumptions can do this more effectively when they are stated explicitly. Thus, although our data did not let us examine this systematically, we believe that studies of micro-processes could potentially enhance the impact they have, and deserve, in organizational studies by confronting the assumptions incorporated into their research designs and the implications of these assumptions for generalizing into organizational contexts. We found that the negotiation studies in our data set were seldom explicit about the assumptions made, and studies often failed to acknowledge reasonable boundary conditions for their findings. Just as objects act as visible artifacts that facilitate knowledge transformation across boundaries, explicating underlying assumptions may make new information more transparent.

Multidisciplinary knowledge sharing broadly benefits scholarship, increasing the likelihood of producing innovative, rather than incremental, knowledge (Dauphinee and Martin 2000). The majority[9] of the authors in our sample are employed in business schools or management departments rather than disciplinary departments, suggesting the knowledge crossover to organizational studies is desirable for political as well as for scholarship reasons. Producing knowledge that stays within a narrow subset of a community of scholarship undermines the opportunities offered by the multidisciplinary nature of these organizational arrangements (Anand et al. 2007).

[9] This information was not available for all the authors in our sample, but at least 74 percent of those whose CVs were accessible are in business schools or management departments. That number may considerably underestimate the actual percentage. We were unable to utilize this variable in our statistical analyses, however, due to the high level of missing data.

Opening up a conversation across communities of scholars may help illuminate the kinds of concerns we raised in this paper, force researchers to expose and discuss their assumptions and infuse the community of organizational scholarship with new information and ideas. We hope our exposure of the different interpretive schema in modern negotiation research not only enhances our understanding of knowledge sharing, but also influences organizational and negotiation scholars. A renewed discourse across the literatures will enhance our appreciation of the fundamental role of negotiations in organizations as well as our broader understanding of organizations.

Table 1. Summary of articles in data set.[a]

Type	Journal (Count)	Simple Citation
Industrial Relations	ILRR (18)	(Bell, 1995); (Belzer, 1995); (Budd, 1992); (Burgess & Marburger, 1993); (**Cutcher-Gershenfeld, 1991**); (Cutcher-Gershenfeld et al., 1996); (Cutcher-Gershenfeld & Kochan, 2004); (Deery & Iverson, 2005); (Erickson, 1992); (Erickson, 1996); (Hebdon & Hyatt, 1998); (Iankova, 2000); (Ichniowski & Delaney, 1990); (Morishima, 1991); (Nay, 1991); (Paul & Kleingartner, 1994); (Ready, 1990); (Thomas & Kleiner, 1992)
Management	AMJ (14)	(Balogun & Johnson, 2004); (Brett et al., 1998); (Brett & Okumura, 1998); (Conlon & Fasolo, 1990); (Conlon & Sullivan, 1999); (Floyd et al., 1994); (Martin & Berthiaume, 1995); (Parks & Conlon, 1995); (Pillutla & Murnighan, 1995); (Pinkley & Northcraft, 1994); (Polzer et al., 1998); (Simons, 1993); (Tenbrunsel, 1998); (**Yan & Gray, 1994**)
	ASQ (10)	(Bettenhausen & Murnighan, 1991); (Brockner et al., 2000); (Cooper et al., 1992); (Dyck & Starke, 1999); (Friedman & Poldony, 1992); (McGinn & Keros, 2002); (Pisano, 1990); (**Robinson, 1996**); (Rosenkopf et al., 2001); (Seidel et al., 2000)
	OS (10)	(Adair & Brett, 2005); (Coff, 1999); (Glynn, 2000); (Golden-Biddle & Rao, 1997); (Greenwood et al., 1994); (Griffith & Northcraft, 1994); (Hardy & Phillips, 1998); (Kochan & Rubinstein, 2000); (Rosenblatt et al., 1993); (**Zaheer et al., 1998**)
Organizational Psychology	OBHDP (83)	(Allred et al., 1997); (Anderson & Thompson, 2004); (Arunachalam & Dilla, 1995); (Ball et al., 1991); (Bazerman et al., 1992); (Beersma & De Dreu, 2002); (Bereby-Meyer et al., 2004); (Blount et al., 1996); (Blount & Larrick, 2000); (Boles et al., 2000); (Bottom & Studt, 1993); (Bottom, 1998); (Brockner et al., 2005); (Brodt, 1994); (Brodt & Tuchinsky, 2000); (Chen & Komorita, 1994); (Chen et al., 1996); (Chen, 1996); (De Dreu et al., 1994); (De Dreu & Boles, 1998); (De Dreu, 2003); (Diekmann et al., 1996); (Fobian & Christensen-Szalanski, 1993); (Fobian & Christensen-Szalanski, 1994); (Gelfand & Christakopoulou, 1999); (Ghosh, 1996); (Gist & Stevens, 1998); (Handgraaf et al., 2004); (Harinck et al., 2000); (Harris & Carnevale, 1990); (Hilty & Carnevale, 1993); (Keysar et al. et al., 1995); (Kim, 1997); (Kim et al., 2003); (Kramer et al., 1993); (Kray et al., 2002); (Kristensen & Garling, 1997); (Larrick & Boles, 1995); (**Lim & Murnighan, 1994**); (Loewenstein et al., 2005); (Mannix & Loewenstein, 1993); (Mannix et al., 1995a); (Mannix et al., 1995b); (Messick et al., 1997); (Moore et al., 1999); (Moore, 2004); (Morgan & Tindale, 2002); (Naquin, 2003); (Northcraft et al., 1998); (Novemsky & Schweitzer, 2004); (O'Connor, 1997); (O'Connor & Arnold, 2001); (Okhuysen et al., 2003); (Olekalns et al., 1996); (Oliver et al., 1994); (Peterson & Thompson, 1997); (Pillutla & Murnighan, 1996); (Pinkley et al., 1994); (Pinkley et al., 1995); (Rapoport et al., 1997); (Ravenscroft et al., 1993); (Ritov, 1996); (Robert & Carnevale, 1997); (Shapiro & Bies, 1994); (Singh, 1997); (Solnick & Schweitzer, 1999); (Sondak & Bazerman, 1991); (Sondak et al., 1995); (Srivastava, 2001); (Stuhlmacher & Stevenson, 1994); (Tenbrunsel et al., 1999); (Thompson & Hastie, 1990); (Thompson & Loewenstein, 1992); (Thompson & DeHarpport, 1994); (Thompson et al., 2000); (Tinsley et al., 2002); (Valenzuela et al., 2005); (Valley et al., 1992); (Walters et al., 1998); (White et al., 1994); (White & Neale, 1994); (White et al., 2004); (Whyte & Sebenius, 1997)
	JAP (19)	(Adair et al., 2001); (Arnold & O'Connor, 1999); (**Ashford & Black, 1996**); (Conlon & Ross, 1993); (De Dreu et al., 1998); (Gelfand & Realo, 1999); (Gelfand et al., 2002); (Gerhart & Rynes, 1991); (Humphrey et al., 2004); (Kim & Fragale, 2005); (Kwon & Weingart, 2004); (Leung et al., 2004); (Naquin & Paulson, 2003); (O'Connor et al., 2005); (Pinkley, 1995); (Ross & Wieland, 1996); (Stevens et al., 1993); (Tinsley, 2001); (Weingart et al., 1993)
Social Psychology	JESP (18)	(Bornstein et al., 2004); (Chen et al., 2003); (Curhan et al., 2004); (De Dreu & Van Kleef, 2004); (De Grada et al., 1999); (Drolet & Morris, 2000); (Matheson et al., 1991); (Moore, 2004); (Morris & Sim, 1998); (Ohtsubo & Kameda, 1998); (**Olekalns & Smith, 2003**); (Thompson, 1990); (**Thompson, 1991**); (Thompson, 1993); (Thompson et al., 1995); (Van Beest et al., 2005); (Van Dijk et al., 2004); (Weingart et al., 1999)
	JPSP (21)	(Barry & Friedman, 1998); (Bornstein, 1992); (Bowles et al., 2005); (Cotterell et al., 1992); (**De Dreu et al., 2000**a); (De Dreu et al., 2000b); (Diekmann et al., 1997); (Diekmann et al., 2003); (Enzle et al., 1992); (Forgas, 1998); (Galinsky & Mussweiler, 2001); (Galinsky et al., 2002); (Kray et al., 2001); (Larrick & Blount, 1997); (Morris et al., 1999); (Thompson, 1990); (Thompson, 1995); (Thompson et al., 1996); (Van Kleef et al., 2004); (Weingart et al., 1996); (Wit & Kerr, 2002)
	PSPB (18)	(De Dreu & Van Lange, 1995); (De Dreu et al., 1999); (Eggins et al., 2002); (Galinsky et al., 2002); (Galinsky et al., 2005); (Garcia et al., 2001); (Kray et al., 2004); (Kray et al., 2005); (**Liberman et al., 2004**); (Moore, 2005); (O'Connor & Carnevale, 1997); (Ohbuchi et al., 1996); (Olekalns & Smith, 1999); (Olekalns & Smith, 2005); (Paese & Gilin, 2000); (Parks & Rumble, 2001); (Van Beest et al., 2003); (Vorauer & Claude, 1998)
Sociology	AJS (5)	(Bittman et al., 2003); (Chaves, 1993); (**Molm et al., 2000**); (Morrill, 1991); (Phillips, 2001)
	ASR (9)	(Bonacich, 1990); (Bridges & Villemez, 1991); (Lawler & Yoon, 1993); (Markovsky et al., 1993); (**Molm et al., 1999**); (Molm et al., 2003); (Shrum, 1990); (Stepan-Norris & Zeitlin, 1995); (Thye, 2000)

[a] Bold cites have highest annualized citation rates among those in the journal.

Table 2. Coding percentages. Articles are counted more than once when coded on multiple categories.

"WHO"	Relationships among negotiators*					Coalition Potential	
	Classmates	Strangers	Embed'd	Hierarch'l	Relation'p	None	Coalitions
Percent	65%	16%	20%	1%	8%	90%	10%

"WHAT"	Dependent Variables* (70% of articles received > 1 code)							External Effects	
	Tang' ble	Percept's of outcomes	Process	Power	Status	Trust	Relation'p	Effects outside focal Negotiat'n	All effects within Negotiat'n
Percent	86%	30%	42%	9%	27%	5%	9%	10%	90%

"WHEN"	1-shot	1-shot w/ phases	Multi-round	Recursive
Percent	51%	18%	6%	25%

*Articles could receive multiple codes in this category.

Table 3. Summary of open and closed systems assumptions about negotiations

	Closed systems assumptions	Open systems assumptions
Who	• Negotiations take place between parties with independent preferences and interests. • Coalitions or constituencies are not critical to the negotiation.	• Negotiations take place between parties connected through personal and organizational relationships and social networks. • Alliances at and away from the table are critical to negotiations.
What	• Negotiations primarily involve material resource exchanges. • Negotiation outcomes have little effect on the broader organization	• Negotiations involve symbolic resources as well as material resources. • Negotiations affect and are affected by larger organizational structures and systems.
When	• Negotiations are discreet events.	• Negotiations are overlapping, recurrent and recursive events.

Table 4: Coding categories within open and closed systems assumptions

Open systems	Closed systems
WHO	
Relationships among negotiators*	
R= Existing direct tie relationship, other than reporting relationship (coded H) H = Hierarchical power or status relationship E = Embedded, tied via the collective; includes market-based negotiations in which parties are embedded in market; excludes classmates	S = Strangers recruited as experimental subjects C = Classroom exercise; participants recruited in class; no consideration of prior or future relationship
Coalition potential	
Coal = 1: coalitions available to at least one party	Coal = 0: no coalitions possible
WHAT	
Dependent Variable*	
R = Relationship; e.g., future partner selection based on relationships; attitudes about other party; perceptions of other party, except trust/reputation (coded "T") or status or power ("S" and"Pw") S = Status; social esteem and/or position in the informal hierarchy Pw = Power; resources that can be brought to bear on a negotiation, e.g., BATNA T = Trust/reputation	$ = Tangible, material resources; includes impasse/agreement rates and votes on ratification P = Negotiation process; e.g., perceptions of process; number of offers; perceptions of fair treatment; evaluations of competitiveness/cooperativeness O = Negotiator attitude; perceptions, attitudes, moods or emotions regarding the negotiation; e.g., perceptions of outcome fairness, participant satisfaction, perceptions of others' motivations; does not include process perceptions (coded "P") and perceptions of other party (coded "R)
External effects	
E = 1: Negotiation's effects on larger organizational issues outside negotiation itself	E = 0: All measured effects internal to focal negotiation/parties at the table
WHEN	
1p = one-shot with distinct phases R = Recursive or ongoing, reserved for those studies in which effects of one negotiation on another were actually measured M = Multiple rounds, ongoing negotiation.	1 = one-shot; includes experiments in which subjects played multiple separate negotiations with no repeat partners or consideration of carry over effects across rounds.
*Articles were coded with multiple codes in this category when appropriate.	

Table 5. Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Mean	4.31	0.04	0.78	0.18	0.24	0.46	0.07	0.08	0.53	2.03	47.9	18.16	0.39	0.56	0.5	9.88
(S.D.)	(-13.09)	(-0.2)	(-0.42)	(-0.38)	(-0.43)	(-0.5)	(-0.25)	(-0.27)	(-0.5)	(-0.76)	(-19.04)	(-6.68)	(-0.62)	(-0.64)	(-0.5)	(-4.14)
1. Mgmt. cites	--															
2. Ethnography	0.22*	--														
3. Experiment	-0.30*	-0.39*	--													
4. Field	0.22*	-0.1	-0.88*	--												
5. JPSP, JESP or PSPB	-0.12	-0.06	0.25*	-0.23*	--											
6. OBHDP or JAP	-0.16**	-0.19*	0.44*	-0.38*	-0.52*	--										
7. Soc. Journal	-0.04	0.13	-0.18*	0.12	-0.15**	-0.24*	--									
8. I.R. Journal	-0.06	-0.06	-0.55*	0.63*	-0.17**	-0.27*	-0.08	--								
9. Mgmt. Journal	0.44*	0.30*	-0.37*	0.24*	-0.24*	-0.39*	-0.11	-0.13	--							
10. Journal prestige	0.21*	0.08	-0.01	-0.03	0.39*	-0.55*	0.20*	-0.32*	0.39*	--						
11. Wi/ article citation count	0.18**	0.23*	-0.07	-0.05	0.08	-0.05	0.11	-0.25*	0.1	0.26*	--					
12. No. pages	0.17**	0.21*	-0.22*	0.13	-0.24*	0	0.28*	0	0.1	-0.1	0.11	--				
13. Who_open	0.26*	0.32*	-0.78*	0.68*	-0.26*	-0.39*	0.23*	0.43*	0.36*	0.02	0.11	0.25*	--			
14. What_open	0.28*	0.33*	-0.37*	0.23*	-0.08	-0.21*	0.12	0.04	0.28*	0.14**	0.27*	0.14**	0.42*	--		
15. When_open	0.18*	0.12	-0.31*	0.28*	-0.20*	-0.15**	0.12	0.23*	0.20*	-0.01	-0.14**	0.16**	0.34*	0.16**	--	
16. Yrs. since publication	0.16**	-0.03	-0.16**	0.20*	-0.22*	-0.02	0.08	0.21*	0.08	-0.04*	-0.31	0.12	0.16**	-0.06	0.27*	--

Significance as follows: ** ($p < .01$); * ($p < .05$)

Table 6. Management Citation Counts by Who, What, When

Open systems (OS) codes	Number of observations	Mgmt. citations Mean (S.D.)	Annualized Mgmt. citations Mean (S.D.)
Who = 0 OS codes	146	2.38 (3.84)	.28 (.43)
Who = 1 OS code	50	6.52 (19.68)	.64 (1.55)
Who = 2 OS codes	16	15.00 (28.79)	1.63 (2.90)
What = 0 OS codes	110	2.26 (3.50)	.28 (.41)
What = 1 OS code	85	3.81 (12.96)	.35 (.88)
What = 2 OS codes	17	20.00 (31.68)	2.26 (3.12)
When = 0 OS codes	107	1.93 (2.95)	.25 (.40)
When = 1 OS code	105	6.72 (18.09)	.69 (1.62)

Table 7. Negative binomial regression testing effects of assumptions on rate of management journal citations, 1990-2007. N = 212.

	Model 1		Model 2	
Mgmt cites	IRR		IRR	
Ethnography	.808		.826	
	(.384)		(.387)	
Experiment	.600		.619	
	(.207)		(.245)	
JESP_JPSP_PSPB	.174**		.167**	
	(.062)		(.060)	
OBHDP_JAP	.328**		.291**	
	(.124)		(.114)	
Soc. Journal	.174**		.162**	
	(.076)		(.068)	
I.R. Journal	.174**		.190**	
	(.092)		(.098)	
Journal Prestige	1.51*		1.43+	
	(.271)		(.271)	
No. cites	1.02**		1.02**	
	(.006)		(.006)	
No. pages	1.02		1.03	
	(.015)		(.015)	
Who_open			.617+	
			(.162)	
What_open			1.43*	
			(.237)	
When_open			1.58*	
			(.338)	
Yrs. since pub	(exposure)		(exposure)	
/lnalpha	.184	.156	.099	.159
alpha	1.202	.187	1.105	.179
Log likelihood		-421.107		-416.038
LR chi2 (8)/(11)		109.14		119.28
Prob > chi2		.000		.000
Pseudo R2		.115		.125
Test for change in LR			LR chi2(3) =	10.34
			Prob > chi2 =	0.02

Standard errors are shown below each coefficient. Significance as follows:
** ($p < .01$); * ($p < .05$); + ($p < .10$)

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