Reinforcing the Micro/Macro Bridge: Organizational Thinking and Pluralistic Vehicles

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Organizational research is less divided along micro and macro lines than is often assumed. This article addresses the developments made in bridging micro and macro organizational research over the past 30 years, in particular, the mainstreaming of multilevel organizational thinking as standard practice. Related developments include the multilevel heuristics commonly used in the field’s research designs as well as its theory and research regarding self-organizing multilevel processes and cross-level interventions. Advocating integrative pluralism, this article then recommends three approaches to expanding and deepening micro/macro integration, including active use of alternative representations in research, systematic reviews that integrate findings across levels, and computer simulations modeling cross-level complexity.

**Keywords:** multilevel theory; multilevel methods; cross-level research

I have a thesis that runs a bit counter to the notion put forth in the special issue’s Call for Papers. Instead of a wide chasm separating the micro and macro domains in organizational research, I suggest that we now take for granted the multilevel, micro/macro thinking inherent in the work lives of many organizational scientists. Indeed, a lot of the chasm has been bridged. As such, this article first explores the developments made in bridging micro and macro organizational research over the past 30 years. At the same time, like the Golden Gate...
Bridge, whose signature orangey-red span is constantly being repainted to protect it from damp and salt air, our bridge(s) too need ongoing maintenance. This article then highlights ways to further develop the micro/macro integration in organizational research.

**Building the Bridge(s)**

Initiatives to bridge the domains of micro and macro have been around for well over 30 years in management and organizational research (e.g., Roberts, Hulin, & Rousseau, 1978). In the early years, initiatives bridging micro and macro research and theory involved some new ways of thinking, including, in particular, expanded notions of what research was relevant to understanding a given organizational topic or problem. Organizational scholars started paying more attention to what several disciplines like psychology, sociology, anthropology, economics, or political science had to say about a given organizational phenomenon. Phenomena known to operate across levels such as power, change, stress, and performance were recognized to be inherently interdisciplinary (cf. Katz & Kahn, 1966/1978). The groups constituting sociology’s unit of analysis and social psychology’s context became the subject of multilevel theory and analysis by organizational researchers, promoting a cross-level view of the dynamics of groups as diverse as surgical teams, string quartets, and cockpit crews (Hackman, 1980). This interdisciplinary, multilevel perspective has been aided by the confluence of scholars trained in other disciplines now doing management and organizational research.

Focused on integration, this new thinking emphasized what could be learned by crossing levels, for example, by taking a more bottom/up view of worker attitude and motivation examining how individual motives affected position attainment and vice versa (O’Reilly & Roberts, 1975), or a more top/down look at how structure impacts individual agents (DiMaggio, 1991). Exposed to these ideas as a first-year doctoral student interested in job design, I recall a light bulb going on in my head while reading Herman and Hulin’s (1972) article tying departmental and position factors to individual attitudes. It struck me that job differences might account for this effect, leading ultimately to research linking organizational technology and structure to worker attitude and behavior through the mediated effect of job design (Rousseau, 1977, 1978a, 1978b).

In its initial stages, this thinking about levels was fairly rudimentary. It did not necessarily involve much theory building:

The material here is philosophically oriented toward basic concepts and their interactions, not toward operationalization and manipulation . . . we believe people from a wide range of disciplines can make contributions to our understanding. But we are concerned with the lack of integration of research findings, research efforts, and theory development in the field. (Roberts et al., 1978, pp. x-xi)

Lacking concepts that accounted for connections across levels, theory building involving multiple levels was considered “treacherous conceptual terrain” (Whetton, 2002, p. 54):

The literature on multilevel approaches to theory development presents the following conundrum. On the one hand, given that most constructs of interest to organizational scholars are embedded in
a complex, multilevel set of interdependent processes, all single-level explanations of these constructs are, by definition, seriously under specified. On the other hand, given the quantum increase in conceptual complexity associated with multilevel theorizing, it is inappropriate to include concepts from multiple organizational levels in a theoretical conception without clearly identifying the specific type of cross-level effect proposed . . . and the cross-level process that accounts for the effects. (Whetton, 2002, p. 54)

In consequence of this conceptual complexity, novice theorists were advised to “act as if the phenomena occur at only one level of theory and analysis. In this way, a theorist temporarily restricts his or her focus, putting off consideration of multilevel processes for a period” (Kozlowski & Klein, 2000, p. 13). Still, the implication of this advice to novices was that ultimately you demonstrated your scholarly chops when your theories were more realistically multilevel.

We have come to see considerable development of new theory that spanned levels. It addresses multilevel phenomena, with comparable processes existing at different levels as in threat-rigidity responses (Staw, Sandelands, & Dutton, 1981) or the emergence and codification of routines (Simon, 1996). Cross-level mechanisms where phenomena at one level influence another’s are also better integrated into our understandings of organizational phenomena. Organizational mission and values or policies and structures are now understood not only in terms of top/down dynamics but bottom/up processes too, enacted by those who apply them as well as those affected by them (Bartunek, 1984; Feldman & Pentland, 2003). Goals, schemata, and cognitive limits, once the purview of micro-research, now pervade macro-organizational theory development too (e.g., Aldrich & Ruef, 2006). What once seemed dauntingly complicated now appears to be more tractable. This greater comfort and ease with bridging macro and micro came about, I think, for at least five reasons.

Thinking Organizationally

Thinking organizationally refers to habits of mind that understand human behavior in relation to the groups and organizations in which they are embedded and whose actions they shape. Over the past 30 years since the move toward greater integration of micro/macro theory and research, thinking organizationally has gone native—a taken-for-granted practice that organizational scientists just do. As such, if we spend most of our time working with other organizational researchers, this cross-level bent or multilevel habit of mind is not particularly salient. How often does a fish think about water? (You know what I mean.)

Try this thought experiment. Think of the last time you worked on a research-related project with colleagues from another field? How was your approach to that problem different from theirs? Here is an example of what I suspect often plays out. You, an organizational scientist, might participate on a multidisciplinary panel trying to figure out how to address patient safety issues under the care of medical residents. Why might residents tend to have higher rates than other clinicians for prescribing inappropriate treatment or the wrong drug? Organizational science informs us of a whole array of organizational, work group, and individual factors that might contribute to the root cause. Though physicians often focus on the
personal competencies of residents and psychologists commonly view the world in terms of human cognition, an organizational scientist’s appreciation of the complexity in organizing work leads us to consider a web of potential causes tied to hospital practice (fatigue due to regular hospital violations of resident duty hours); work group coordination (poorly structured patient handoffs across shifts garbling communication regarding patient status); and an array of individual beliefs, perceptions, and behaviors (from the residents’ pharmaceutical knowledge and diagnostic skills to how long they might have worked that day or that week and whether a resident when off duty sleeps or pulls a shift at another hospital to pay off school loans). Raising such “organizational” (multilevel and cross-level) issues can contribute to such a panel’s collective conversation regarding a complex problem. It is also consistent with the notion that multilevel “organizational” thinking is a distinctive competence of organizational science (House, Rousseau, & Thomas-Hunt, 1995; Klein & Kozlowski, 2000). We can never surpass psychologists at understanding individual mental processes nor hold advantage over sociologists in accounting for social forces or economists in explicating large-scale market forces. But no field but ours has the multilevel acumen to interpret well organizational phenomena, their internal and external relationships, and the behavior and experience of people therein.

**Heuristics**

Second, having learned to think about organizational phenomena in terms of multiple levels, organizational researchers have developed *multilevel and cross-level heuristics* for making sense of their observations. Heuristics are experience-based techniques to solve problems, to learn, or to make new discoveries.

There is the rule of thumb, “think about what might be happening one-level up AND one-level down,” in the case of a group or some process of interest (Hackman, 2003). A prime example of thinking organizationally, this cross-level heuristic provides a ready strategy for beginning to analyze the effects on an actor (person, group, organization) of the larger setting or the members or subunits nested in it.

Another heuristic is partitioning variance, that is, conceptualizing how the variance in a dependent variable that a study might include would be affected by factors at various levels. Individual absenteeism, for example, can be a product not only of individual predispositions, circumstances, and attitudes but also of job factors, work group norms, and organizational policies and incentives. Designing studies and analyses with such partitions in mind leads to theoretically more appropriate measures, statistical models, and controls. Thirty years into micro/macro integration, heuristics such as these are part of the craft knowledge of organizational researchers, particularly those doing field research.

**Multilevel Concepts: Self-Organizing Processes**

A third reason is the product of the new multilevel theory and research itself: the discovery and conceptualization of self-organizing processes through which two or more levels are
linked. Occurring without being managed or directed, self-organizing processes in open systems such as organizations and work groups arise from interactions with their larger environments and the feedback that follows. Several mechanisms have become central to micro/macro bridging.

One self-organizing mechanism is emergence. In the case of what is called strong emergence, a new unit (e.g., a work group with shared beliefs) arises out of the interactions of lower level ones (e.g., separate individuals who over time become more interdependent). The process whereby lower level responses come to form higher level, collective phenomena is a hallmark of Karl Weick’s (1995) seminal work. Emergence helps explain why two or three free spirits who start a company can create over time a big company with liberal values.

Embeddedness is another self-organizing mechanism. It refers to processes whereby lower level phenomena become aligned with higher level ones, a factor in numerous top/down effects (cf. Granovetter, 1985; Uzzi, 1997). Embeddedness helps explain why a buttoned-up employee might become more causal and relaxed after being hired at the free-spirited company above (Waldman & Yammarino, 1999; Whetton, 2002). Both these mechanisms play out in Schneider’s (1987) classic article “The People Make the Place” and its articulation of how multilevel processes associated with selection, adaptation, and attrition shape the climate and culture of organizations. (There are more self-organizing mechanisms, such as entrainment and feedback loops; I focus here on the two that seem to figure most prominently in multilevel organizational research.)

**Cross-Level Interventions**

A fourth factor is the recognition of the cross-level interventions used to solve coordination problems and adapt to change in complex organizations. Global competition has ramped up the level of interdependence within firms, calling attention to the greater linkages within (and sometimes between) organizations. Managers often adopt practices to solve organizational problems of a cross-level nature by introducing interventions and recurring routines that facilitate the link one level has with others. These linkage practices include interunit problem-solving, feedback-seeking, and knowledge-sharing mechanisms, which can determine how individual and group efforts contribute to the rest of the organization (Goodman, 2000; Klein & Kozlowski, 2000).

Without the introduction of linkage mechanisms, a highly innovative R&D unit may add little to the overall growth and performance of the larger firm or take a longer time to contribute—unless interventions are introduced to more rapidly transform its innovations into appropriately manufactured and marketed products. The absence of effective mechanisms to link the contributions of one unit’s work to the rest of the firm is a linkage problem and can be cross-level (e.g., unit goal achievement → organizational goal achievement) as well as same-level (interunit; R&D output → manufacturing processes). The absence or malfunctioning of cross-level and interunit linkages increases the incidence of what is termed the “performance paradox,” where high-performing individuals and groups have little impact on the overall performance of the organization—a linkage failure (Goodman, 2000). Firms
are less likely to perform well when linkage problems go unresolved in today’s competitive landscape, making formal linkage mechanisms salient to both practitioners and scholars.

**Multilevel Methods and Analyses**

The fifth factor promoting multilevel thinking and research is the development and uptake of multilevel research methods and statistical procedures, which allow the actual testing of cross-level models (Klein & Kozlowski, 2000). In science, increased complexity in theory and research often accompanies the development of new tools (and vice versa). Organizational science is no exception. A predominant feature of organizations is that they are hierarchically ordered systems (Hofmann, Griffin, & Gavin, 2000), a feature once problematic for analysis now tamed by the development of hierarchical linear modeling (HLM) used originally for research on schools (Raudenbach & Bryk, 2002). HLM and related approaches permit testing whether higher level factors influence the lower level units nested within them.

Before cross-level analytic tools were developed, we jerry-rigged cross-level analyses out of existing methods—like creating a dummy variable for unit membership or assigning to everybody in the same work group their unit’s score on technology or structure—and then regressing individual attitudes on these variables. Messy and often in violation of basic distributional assumptions, these bootstrapped methods nonetheless provided a bit of traction in bridging levels empirically until more appropriate methods came along. This tale of bootstrapping is the moral equivalent of telling your kids (or doctoral students) about how you had to walk all those miles through the snow to get to school—except in those days it was done while carrying a Monroe calculator. (Check out Wikipedia and YouTube for information on the Monroe IQ-213 rotary calculator, a 14+ lb. device used to compute statistical analyses prior to the common use of mainframe computing.) Multilevel empirical work is more likely in the future as a result of the availability of well-suited statistical tools.

**Implications**

Organizational scientists have become widely engaged in multilevel thinking, theory building, and analysis. It is second nature for many organizational scholars, and important for our doctoral students, to think about, model, and analyze multilevel phenomena. At the same time, challenges remain.

**Maintaining and Extending the Bridge**

To paraphrase Jerry Seinfeld’s observation on marriage, “bridges don’t work, bridges are work.” Organizational scholars may now have become more accustomed to thinking in multilevel ways, as reflected in our doctoral education and research practice. (Search Google for “multilevel” and “organizational research” and “syllabus” to find evidence of multilevel training in doctoral programs.) Organizational science continues its integration of the theory and research from other disciplines while at the same time developing its own distinctive
multilevel approach to research. But we should not take the maintenance of micro/macro connections, let alone their further integration, for granted.

**Institutional Threats**

To continue to develop an integrative organizational science characterized by thinking organizationally, sustained attention to multilevel issues is required. In his critique of contemporary American business schools and how the pursuit of rankings and citation counts, Khurana (2007) attributes some of the problems with the quality and public impact of business school education to the recruitment of faculty from the basic social sciences where acontextual studies may yield higher publication volumes and hence greater research ratings. Note that organizational scientists have tended to come from a diverse array of disciplines. What Khurana suggests is that new management faculty may not share an interest in participating in a multilevel organizational science.

I believe that good social science theory building and research of any ilk can inform organizational scholarship. The real concern is how to promote the constructive interplay and integration of micro/macro approaches to organizational research when this manner of thinking is foreign to some scholars recruited by business schools. Of particular concern is that scholars educating organizational doctoral students may not always themselves be very informed or adept at micro/macro theory and research. The problem is one of resource allocation today (e.g., faculty hiring and development). It may be a problem of legitimacy in future, if over time doctoral programs were less able to train their graduates in multilevel organizational theory and research methods.

Of particular concern is that while the last 30 years have seen considerable theoretical and methodological advance in multilevel and cross-level organizational research, this work is socially complex, needing a community with shared interests and knowledge to sustain and develop it further. So let us talk a bit about this complexity and what we might do to sustain a community of organizational scholars able to think about, theorize, and study the multilevel character of organizing and organizations.

**Challenges of Complexity**

We have seen how complexity in multilevel, micro/macro organizational research is rooted in theoretical and methodological issues. It is tied to cognitive and social challenges too. Weick (1982) pointed out that bridging levels in an organizational change is made difficult not only because people have different information and perceptions but also because they act and modify only the environments they perceive. In this case, the bridging of levels is itself the change we have undertaken, and its limitations are our own knowledge and understandings as organizational scientists. Like a lot of things worth doing, multilevel research is a cognitive challenge (how much can we know about complex phenomena), a social dilemma (why invest in knowing about this instead of something else), and sometimes a political process (my level is more important than yours).
A major source of complexity in multilevel theory and methods comes from the prevalence of contingencies. Feedback loops, chaotic patterns, and path dependence are some of the contingent conditions organizational scientists now use to account for their observations. Organizational scholars have noted that such contingent conditions underlie both catastrophic organizational errors (e.g., Barings Bank; Ramanujam, 2003) and the mundane processes of work group problem solving (Gersick, 1988). These conditions rule out both determinism and single-level thinking as a way to represent causation in organizational phenomena. Instead, contingent conditions mean that causation in the behavior of humans in organizations and the actions of firms themselves are better expressed in terms of susceptibility to prior conditions (Mitchell, 2009). The pertinent prior conditions needed to represent causation well may entail a huge array of factors that influence an employee, a distributed team, or a social enterprise.

In organizational research, the recognition of the complexity inherent to organizational phenomena underlies the argument of Whetton (2002) and others that empirical tests of a hypothesized relationship should not focus on whether the hypothesis is true or false but, rather, on the conditions under which it holds. Note that attention to the conditionality of theory or findings is more than just the pursuit of moderators, those factors that when present enhance or impede the observance of an effect (cf. Aguinis, Beaty, Boik, & Pierce, 2005; Ghiselli, 1960). Attention to conditionality means thinking carefully about the (set of) conditions that make an effect possible.

The conditionality I refer to has to do with fundamental conditions required for the operation of a causal mechanism underlying some organizational phenomenon. I have run across this conditionality in my own work on idiosyncratic deals. Deals individual workers negotiate for themselves can be functional and beneficial under conditions of high trust or fairness. They become dysfunctional, and potentially impossible, where interpersonal trust or organizational fairness are absent—but they can still yield some benefit where coworkers trust the boss who granted the deal or view the person with the special deal as a good friend (Rousseau, 2005). Conditionality may operate beyond the mere effect of a single factor, extending to the underlying processes of social construction (how coworkers make sense of special deals where they might like the boss or the coworker, both, or neither) as well as broader institutional forces (what is normative? what is illegal?). Because conditionality is complex, simply hunting for moderators may not aid our understanding of the phenomena. Moderators are typically tested with little attention to the nature of conditionality, that is, whether it is necessary for an effect (i.e., willingness to accept special treatment on the part of another) or merely sufficient (e.g., friendship).

Conditionality also derives from the institutional forces operating on organizations. The conventional Western notion of bureaucracy often is represented as “red tape” or an iron cage that limits individual freedom. By studying the politically charged organizations of Eastern bloc countries, Pearce (2001) observed how the absence of rule of law and professionalism made the procedural justice and institutional trust taken for granted in the Western bureaucracies all but impossible. Americans typically do not bring whiskey and cash along to motivate tax or postal officials to do their jobs; the opposite was the general case in Hungary and Yugoslavia. By studying a broader range of firms than organizational scholars
commonly study, Pearce called attention to the notion of “good bureaucracy” conditioned on embeddedness in certain societal institutions.

Making Complexity Friendly

What might all this mean for how we go about bridging micro and macro in the organizational science of the future? The conversations begun decades ago identifying multilevel connections in organizational phenomena are as relevant as ever. Yet it is easy to hit the wall of bounded rationality. A person can only be expert in so many things or keep in mind so much at one time. Communities have greater capacity to absorb and deploy expertise than does a single individual. What practices could make it easier to develop and use theory incorporating all that multilevel organizational research tells us?

Special efforts are needed to make integration of organizational research across levels tractable. These efforts must confront two general tendencies in science: increasing specialization as research domains become deeper but narrower and greater reductionism where complex things are simplified to make them easier to study. Bounded rationality and selective attention characterize every human endeavor. Organizational research is not unique in these tendencies. As argued by Sandra Mitchell (2009), a well-known philosopher of science, these trends are pervasive across science. In response, she advocates a form of perspective taking she calls integrative pluralism.

Integrative Pluralism

Mitchell (2009) describes the difficulties created by reductive models of science, such as found in physics, in interpreting the more complex behavior of biological systems and the artificial systems humans create—of which organizations are a prime exemplar. She argues that new approaches to knowledge are needed to confront the complexity inherent in such systems. As defined by Mitchell, integrative pluralism is “an expanded epistemology of science that embraces both traditional reductive and new, multilevel context-dependent approaches to scientific explanation and prediction” (p. 2). She notes that the complexity of multilevel systems with cross-level processes can involve a deep uncertainty that cannot be eliminated. Mitchell describes why this complexity cannot be represented by scientific methods suited to predictable and static phenomena:

If all of today’s scientists restricted themselves to . . . meet[ing] the stringent standards of universality and exceptionlessness, much of great value that has been discovered about complex, contingent, and evolved structures would not qualify as scientific knowledge. (p. 3)

Integrative pluralism is an approach to science where in studies of the complex “only non-reductive, integrated multilevel, pragmatically targeted explanations will succeed” (p. 106). These explanations will incorporate contextual richness, becoming “more local and less global.” Recalling our discussion of contingent conditions above, Mitchell’s concept of
integrative pluralism is helpful in identifying vehicles to further micro/macro integration and multilevel perspectives in organizational science.

**Vehicles for Integration**

1. **Selective Representations**

*Selective representations* refer to the various conceptual frameworks scholars use to represent the same phenomena. In the case of organizational change, for example, there are sequential, cyclical, and process models of change, all with empirical support. The framework that represents all observed change pathways is too cognitively complex to develop or use. Similarly, in accounting for the motivation of workers, we have the alternative (yet not unrelated) representations from labor economics (e.g., agency theory; Eisenhardt, 1989) and organizational psychology (e.g., expectancy theory; Vroom, 1964; control system theory; Lord & Hanges, 1987). Yet we seldom discuss how we choose a particular representation. (Note that the typical physicist knows a variety of ways to solve certain common problems [Reif, 2008]. For example, depending on whether one wants to predict how an object’s velocity depends on time or how its speed depends on its position, Newton’s law and the energy law are respectively appropriate [Reif, 2008, p. 38].) I suggest that in confronting a research question or organizational problem, we need to be more explicit in noting what representation choices we make, including the options we eliminate and why. The framework, the theory, or the set of concepts applied—each is chosen based on what serves our interests and tracks with our expertise. That is normal. It is just seldom talked about—one reason why the micro/macro divide may still be salient.

Selective representations are made not just for cognitive ease but also because various approaches have different goals (Mitchell, 2009). In studies of individual motivation, for instance, the agency theory favored by scholars studying organization-level phenomena (Eisenhardt, 1989) may work better to assess effects of monitoring and control systems, whereas the expectancy theory favored by those working at the individual level (Vroom, 1964) better suits the analysis of within-individual choices among alternatives. Rather than merely adopting one approach, it is important to talk about the implications of one representation’s use versus another’s. For more pragmatic and pluralistic scientific practice, we need to encourage alternative representations of phenomena and problems. In this vein, research methodologists now emphasize the value not of discrete hypothesis testing but of testing full, alternative models (Rogers, 2010).

Attention to various ways of representing findings is important for another reason. The more complicated notions of causation that accompany integrative pluralism can be a tough sell for organizational scholars seeking to influence students and practice. In management education, where learners come from many backgrounds and may have little scientific training, let alone social science knowledge, it can be difficult for people to understand and apply information beyond straightforward linear connections. We need to take pains to develop ways of representing realistic but complicated causal connections in user-friendly
ways (Rousseau & Boudreau, 2010). Doing so may also help make multilevel organizational research more accessible to people from other disciplines.

2. **Systematic Syntheses**

Systematic reviews or syntheses are analyses and interpretations of a full body of research relevant to a particular theoretical issue or practical question. Like their statistical counterpart the meta-analysis, systematic syntheses require that pains be taken to identify and consider all research relevant to a particular question or issue, regardless of its level or methodology (Rousseau, Manning, & Denyer, 2008). More systematic synthesis of research on organizational issues across levels is sorely needed. We cannot rely on our personal reading of the literature or even recognized experts to appropriately interpret the vast array of available scholarship.

Reliance upon any sampling of the literature risks misrepresenting its findings (Rousseau et al., 2008). It is particularly difficult to avoid cherry-picking findings that support preferred points of view. The complexity of organizations means that any given study provides only a partial explanation. The challenge is figuring out how an array of small findings and explanations fit together (Bhaskar, 1998). We need not be interested in the whole system to confront complexity. It is enough that different levels produce the behavior or phenomenon of interest, recalling our example above of the treatment and prescribing errors medical residents make.

Review syntheses provide an opportunity to read one body of research into another, promoting integrative pluralism. For example, if one took the research on organizations in the West and read it into organizational studies in Communist China (cf. Shenkar & von Glinow, 1994), we might arrive at a better understanding of the connection between government and society in organizational behavior and theory. These systematic reviews can also be combined with attention to alternative representations (above). Taking research on agency theory and reading expectancy theory findings into it (and vice versa) can help us better integrate these bodies of work and identify their respective limitations and generalizable findings.

3. **Simulations**

The complexity of organizational phenomena involves not only processes across various levels but effects playing out over time. The fact that outcomes from the decision a CEO makes today may not be visible for a decade or more makes it tough to understand either its dynamics or its implications. In geology and biology, time-lagged effects are frequently examined through simulation. Why not in organizational science? Though simulations are used occasionally in organizational research (Burton & Obel, 1980), it is far from mainstream, and much dispute exists regarding issues of validity and generalizability where simulated findings are concerned (Burton, 2003). More effort here could help us appreciate and interpret the effects of organizational processes beyond the limited time frames of scholarly studies and the lifetimes of individual scholars.
As a simple example, consider a contemporary dilemma, the prevailing disparities among women and minorities in university faculty in comparison to their representation in the academic job market. Differences in talent and capability have been offered as an explanation for the disparity along with explicit discriminatory practices and chilly professional climate (cf. Varian, 1999). One group of scholars conducted a first qualitative study that identified intradepartmental dynamics in their college that were contributing to female faculty turnover at higher rates than males. Their college had set a goal in 1980 of 20% women faculty and consistently recruited women at that rate for the next three decades—ignored their high turnover. The result after nearly 30 years was closer to 10% women, a minority status too small to achieve sought-after community benefits (improved recruiting of female students, more supportive faculty climate). The task force then conducted a simulation to estimate under various scenarios how many years it would take to attain a 20%, 30%, or 40% female faculty. Results revealed two things: Some targets could require more than a hundred years to achieve, and any target was difficult to achieve without a simultaneous retention effort (Bikhchandani, Lawrence, Longstaff, & Scott, 2006). Relying solely on cross-sectional data or the archival record would have been insufficient to realize the scope of the organizational challenge or the powerful impact failure to retain women created.

Simulations make it easier to test assumptions, by requiring first that they are made explicit, and then permitting their effects to be observed over more time intervals than our attention span, resources, and lifetimes would otherwise allow. They help counter some of the sampling problems, range restriction, and variability in significance found in empirical work, where heterogeneity in results across studies is often attributed to the effect of context, even though measurement and sampling error are the real cause (Fichman, 2010). Simulations are a means of learning about possible outcomes across a broader range of values than we may readily discern in day-to-day observation of organizations. I think it inevitable that more scholars will turn to simulations in order to come to grips with multilevel organizational complexity. Sooner would be better than later.

Conclusion

We are back to the fundamental matter with which multilevel organizational research began—how we think and talk to each other about the complexity of the organizing and organizations in our midst. Conceptual, theoretical, and methodological developments have led to progress in micro/macro integration. In maintaining and fostering further integration, other new-to-organizational-science practices are needed to make this bridging easier and more productive. Our challenge is to embrace rather than shy away from the deep uncertainty and the large array of alternative scenarios that can play out in the actions of employees and managers, work groups and executive teams, and organizations themselves.

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