

METATRIANGULATION: BUILDING THEORY FROM MULTIPLE PARADIGMS

MARIANNE W. LEWIS
University of Cincinnati

ANDREW J. GRIMES
University of Kentucky

Multiparadigm approaches aid exploration of particularly complex and paradoxical phenomena by helping theorists employ disparate theoretical perspectives. In this article we provide an extensive guide to multiparadigm exemplars and then link their varied approaches within a metatriangulation theory-building strategy. Our process addresses the challenges theorists face as they select a research topic, collect and analyze data, theorize, and evaluate resulting theory using multiple paradigms. A concluding discussion of the advantages, limitations, and potential applications of metatriangulation positions it within the wider realm of organization theory.

Two decades ago Burrell and Morgan (1979) ushered in a wave of attempts to characterize paradigms employed in organization theory (e.g., Pondy & Boje, 1981; Zey-Ferrell & Aiken, 1981). Such efforts began sensitizing theorists to the notion of paradigms—the assumptions, practices, and agreements among a scholarly community—and legitimizing less mainstream alternatives. Although functionalism-positivism remains dominant, theorists increasingly are grounding their work within more critical and interpretive paradigms. The result is a vibrant field, replete with diverse theoretical views that may enrich our understandings of organizational complexity, ambiguity, and paradox. Yet, the now-pervasive “paradigm mentality” simultaneously proliferates and polarizes perspectives, often inhibiting discourse across paradigms, biasing theorists against opposing explanations, and fostering development of provincial theories (Bouchikhi, 1998; Reed, 1996). As Pondy and Boje forewarned, organization theory faces a frontier problem of “how to conduct inquiry based on several paradigms” (1981: 84).

Recognizing this challenge, Poole and Van de Ven proposed that researchers “look for theoret-

ical tensions or oppositions and use them to stimulate the development of more encompassing theories” (1989: 563). They viewed conflicting paradigms as paradoxes of organization theory, underscoring contradictory yet interwoven facets of complex phenomena. Soon after, Gioia and Pitre (1990) detailed differences in theory building across paradigms and called for metatriangulation: a strategy of applying paradigmatic diversity to foster greater insight and creativity. In response, in the past decade we have witnessed an influx of multiparadigm exemplars (e.g., Bradshaw-Camball & Murray, 1991; Graham-Hill, 1996; Grimes & Rood, 1995; Grint, 1991; Hassard, 1991; Martin, 1992; Reed, 1997; Schultz & Hatch, 1996; Spender, 1998; Weaver & Gioia, 1994; Willmott, 1993; Ybema, 1996).

Yet, multiparadigm inquiry remains provocative, as debates over the commensurability and value of multiple paradigms persist and intensify (see *Organization*, 1998). Some functionalists lament the “anarchy” of paradigm proliferation, advocating a dominant paradigm to enhance the scholarly and political influence of organization theory (e.g., Donaldson, 1985; Pfeffer, 1997). Meanwhile, many postmodernists critique the hegemony of paradigms, calling for “anything-goes” strategies more in tune with eclectic organizational discourses (e.g., Deetz, 1996; Feyerabend, 1979).

In contrast, multiparadigm inquiry contributes a midpoint between dogmatism and relativism (Scherer, 1998), which we believe offers

We thank Special Issue Editor David Whetten and three anonymous reviewers, as well as Blake Ashforth, Greg Bigley, Mark Davis, Gordon Dehler, David Kang, Mihaela Keleman, Ajay Mehra, Deb Rood, and Kristen Taylor for their insightful comments on earlier versions of this article. We presented an early draft at the 1998 annual meeting of the Academy of Management.

tremendous yet unrealized theory-building potential. Multiparadigm theorists value paradigms as heuristics that may help scholars explore theoretical and organizational complexity and extend the scope, relevance, and creativity of organization theory. However, existing multiparadigm approaches are ambiguous and fragmented. Empirical studies often give limited methodological detail and seldom build theory from their efforts (e.g., Bradshaw-Camball & Murray, 1991; Graham-Hill, 1996), while descriptions of theorizing contribute abstract techniques and rarely illustrate their use (e.g., Gioia & Pitre, 1990; Grimes & Rood, 1995).

Our objective in this article is to help theorists apply the insights of multiple paradigms by presenting an explicit and exemplified theory-building process termed *metatriangulation*. We first review the multiparadigm literature, providing a guide to exemplars and their varied approaches. We then link extant multiparadigm approaches within a cohesive theory-building strategy for exploring divergent theoretical views, challenging taken-for-granted assumptions, and portraying organizations in new light. To provide a useful map of the theory-building process, we compare each step of metatriangulation to traditional inductive activities and employ a study of advanced manufacturing technology to illustrate the process in use. We conclude with a discussion of theory-building implications, positioning metatriangulation within the wider realm of organization theory by addressing its advantages and limitations and suggesting future applications.

MULTIPARADIGM INQUIRY: A GUIDE TO EXEMPLARS

Numerous scholars have dissected the paradigm debate, noting the rise in multiparadigm inquiry (e.g., Deetz, 1996; Reed, 1996; Scherer, 1998). Yet, thorough examinations of this growing and diverse literature are scarce (see Schultz & Hatch, 1996, for a brief and insightful overview). To contribute a useful guide to exemplars, we distinguish among three approaches: (1) multiparadigm reviews, (2) multiparadigm research, and (3) metaparadigm theory building. We use the term *multiparadigm* to denote disparate paradigmatic perspectives and *metaparadigm* to signify a more holistic view

that transcends paradigm distinctions to reveal disparity and complementarity.

Multiparadigm reviews involve recognition of divides and bridges in existing theory (e.g., characterizing paradigms X and Y), whereas multiparadigm research involves using paradigm lenses (X and Y) empirically to collect and analyze data and cultivate their diverse representations of organizational phenomena. Lastly, in metaparadigm theory building, theorists strive to juxtapose and link conflicting paradigm insights (X and Y) within a novel understanding (Z). We now review these approaches, discussing their varied objectives and techniques, and we detail their uses in the subsequent section on metatriangulation. Table 1 summarizes the approaches and their exemplars.

Multiparadigm Reviews

In multiparadigm reviews researchers seek to reveal the impact of theorists' underlying, and often taken-for-granted, assumptions on their understandings of organizational phenomena. Two techniques—paradigm bracketing and bridging—often aid reviewers. Paradigm bracketing entails differentiating among varied sets of assumptions. Hassard (1991) explained that theorists "bracket" the assumptions of other paradigms to become familiar with and apply the traditions, language, and methods of a specific paradigm. Such brackets enable theorists to ignore certain aspects of complex phenomena and focus on facets and issues of particular interest (Weaver & Gioia, 1994). In multiparadigm inquiry, paradigm bracketing makes differing assumptions explicit, thereby delineating paradigm distinctions and aiding awareness, use, and critique of alternative perspectives.

Paradigm bracketing originated in early attempts to distinguish and legitimate the assumptions of less conventional paradigms (e.g., Pondy & Boje, 1981; Zey-Ferrell & Aiken, 1981). Burrell and Morgan (1979), for instance, defined paradigms as tightly coupled ideologies, ontologies, epistemologies, and methodologies that guide modes of organizational analysis. Their typology parses four paradigms by polarizing assumptions regarding the nature of social science (objective-subjective) and the nature of society (regulation-radical change). Objectivity presumes an external reality of deterministic

TABLE 1
Multiparadigm Approaches and Exemplars

Exemplar	Technique	Phenomenon of Interest	Output
Multiparadigm reviews			
Alvesson (1987)	Bracketing	Work	Interpretive frames
Astley & Van de Ven (1983)	Bracketing	Organization theory	Debates
Morgan (1983)	Bracketing	Research methods	Modes of engagement
Morgan (1997)	Bracketing	Organization	Metaphors/images
Reed (1996)	Bracketing	Organization studies	Analytical narratives
Smircich (1983)	Bracketing	Culture	Research programs
Gioia & Pitre (1990)	Bracketing and bridging	Theory building; structure	Paradigms; transition zones—structuration theory
Grint (1991)	Bracketing and bridging	Technology	Debates; transition zone—actor network theory
Kaghan & Phillips (1998)	Bridging	Knowledge	Constructivist perspective
Weaver & Gioia (1993)	Bridging	Structure	Structuration theory
Willmott (1993)	Bridging	Labor process	Radical labor process theory
Multiparadigm research			
Bradshaw-Camball & Murray (1991)	Parallel	Organizational politics	Trifocal view
Graham-Hill (1996)	Parallel	Small-firm strategy	4 case studies
Hassard (1991)	Parallel	Work organization	4 empirical studies
Martin (1992)	Parallel	Culture	3 perspective frameworks
Gioia, Donnellon, & Sims (1989)	Sequential	Cognitive scripts	Objective-subjective study
Gioia & Thomas (1996)	Sequential	Strategic change	Subjective-objective study
Lee (1991)	Sequential	Organization	Sequential strategy
Sutton & Rafaeli (1988)	Sequential	Emotional display	Triangulated study
Metaparadigm theory building			
Gioia & Pitre (1990)	Metatheorizing	Organizational structure	Conjecture inversion
Grimes & Rood (1995)	Metatheorizing	Local epistemology	Bridging epistemologies
Morgan (1983)	Metatheorizing	Research methods	Reflective conversation
Poole & Van de Ven (1989)	Metatheorizing	Structure	Paradoxical strategies
Bouchikhi (1998)	Interplay	Organizational paradoxes	Dialectical tensions
Clegg (1990)	Interplay	Power	Metaparadigm theory
Gaventa (1980)	Interplay	Power	Metaparadigm theory
Reed (1997)	Interplay	Structure—action	Stratified ontology
Schultz & Hatch (1996)	Interplay	Culture	Paradigm interplay
Spender (1998)	Interplay	Knowledge	Pluralist epistemology
Ybema (1996)	Interplay	Culture	Metaparadigm theory

and predictable relationships, whereas subjectivity presumes contextually bound and fluid social constructions. Regulation assumes harmonious and orderly social relations, whereas radical change assumes conflict and power asymmetries. Burrell and Morgan (1979) then categorized existing theories within their typology to demonstrate how different assumptions underpin opposing views (see Deetz, 1996, and Gioia & Pitre, 1990, for detailed discussions of the typology).

Although Burrell and Morgan's typology remains the prominent framework for paradigm bracketing, some exemplars loosen paradigm contours to depict diverse debates and metaphors existing in organization theory (e.g., Astley & Van de Ven, 1983; Morgan, 1997; Reed,

1996). In such reviews researchers critique provincialism and partiality, encouraging theorists to reflect on the focus and blinders of varied paradigm lenses. For example, Smircich (1983) and Grint (1991) bracketed views of culture and technology, respectively, to emphasize equally viable yet limited understandings. Alvesson (1987) examined three perspectives on organizational life. His review demonstrates how different "interpretive frames of reference" sensitize theorists to certain conceptualizations and issues and foster divergent insights into the quality, degradation, and self-regulation of work.

The second review technique—paradigm bridging—suggests transition zones: theoretical views that span paradigms. In exemplars scholars claim that although paradigmatic assump-

tions may conflict, boundaries between paradigms are fuzzy and potentially permeable (e.g., Willmott, 1993). For instance, Gioia and Pitre (1990) explain that structuration theory does not separate structuring processes from formal structures. Rather, it posits that actors use generative rules and norms to produce structure; this, in turn, influences and constrains structuring activities.

Transition zone theories, such as structuration theory, are not metaparadigm per se; they foster unidimensional representations that integrate paradigmatic insights and emphasize paradigm similarities, and may privilege one side of a dualism (i.e., an either/or distinction such as structure or action, objectivity or subjectivity; Reed, 1997; Schultz & Hatch, 1996). According to de Cock, Rickards, Weaver, and Gioia (1995), structuration theory does not permit paradigm differences to coexist at a higher, metaparadigm level but operates in a gray area between paradigms in which actions and structures are mutually influencing processes. Discovering transition zones, however, illustrates the possibility and value of communicating across paradigms and may help theorists comprehend "how the phenomena in question can legitimately be subject to various research strategies, while yet remaining a related class of phenomena" (Weaver & Gioia, 1994: 577).

Multiparadigm Research

Multiparadigm research scholars move beyond review of existing literature to apply divergent paradigm lenses empirically. Conducting parallel or sequential studies, theorists use multiple paradigms (their respective methods and foci) to collect and analyze data and to cultivate varied representations of a complex phenomenon. *Parallel studies* preserve theoretical conflicts by depicting the organizational voices, images, and interests magnified by opposing lenses. Exemplars represent responses to Morgan's (1983) call for multisided case studies similar to Allison's (1971) accounts of the Cuban Missile Crisis but grounded in more contrasting assumptions (e.g., Bradshaw-Camball & Murray, 1991; Martin, 1992). Hassard (1991), for instance, viewed a British Fire Service through Burrell and Morgan's (1979) four "analytic cameras." Following Wittgenstein (1963), he presented the resulting accounts as localized lan-

guage games—discourses predicated upon distinct cultural rules. Similarly, Graham-Hill (1996) analyzed data from archives and stream-of-conscious interviews with a firm's CEO. By using case study methods indicative of each paradigm, he wrote four stories that, in conjunction, depict the intricacy and contradictions of small-firm strategy.

In sequential studies researchers cultivate diverse representations to purposefully inform each other, for the outputs of one paradigm-specific study provide inputs for a subsequent study. Applying lenses in succession, theorists seek to grasp their disparate yet complementary focal points. For instance, Gioia, Donnellon, and Sims (1989) employed linguistic techniques to explore local meanings of a construct (cognitive scripts) identified in a prior functionalist study. Lee (1991) proposed a reversed order: using ethnography to discover meanings held by actors experiencing a phenomenon and then positivist methods to operationalize, test, and generalize suggested constructs. Gioia and Thomas (1996) followed this route to examine sensemaking during strategic changes in academia. Sutton and Rafaeli (1988) conducted a more triangulated study. They found unexpected relationships from their deductive analysis and then used interpretivist methods to identify varied underlying norms influencing emotional displays of sales clerks in slow versus busy settings, which guided data reanalysis.

Metaparadigm Theory Building

The third multiparadigm approach helps theorists manage their bounded rationality and, thereby, accommodate opposing views within a metaparadigm perspective. Metaparadigm denotes a higher level of abstraction, from which "accommodation" does not imply unification or synthesis but, instead, the ability to comprehend paradigmatic differences, similarities, and interrelationships (Gioia & Pitre, 1990). The goal is a more rich, holistic, and contextualized view. Metatheorizing techniques help theorists explore patterns that span conflicting understandings. In exemplars researchers assume paradigms offer partial truths, often rooted in differing space and time (e.g., Poole & Van de Ven, 1989). Grimes and Rood (1995) have suggested treating paradigms as "debating voices," arguing their views in search of common

ground. Modeled by Morgan's (1983) "conversations" among divergent research methods, such debates may reveal how lenses represent varied researcher interests, positions in the organizational hierarchy, or time periods. These techniques aid "tests" of metaconjectures: propositions interpretable from multiple paradigms. Ideally, juxtaposing paradigmatic explanations may help theorists translate constructs to a metaparadigm level and assemble a theoretical reference system that links contrasting representations (Gioia & Pitre, 1990).

Interplay techniques help theorists further craft and interpret metaparadigm theory. Schultz and Hatch (1996) defined interplay as cognizance of how paradigmatic insights and biases are most recognizable from opposing views. Highlighting contradictions and interdependence invokes a creative tension that may inspire theorists to question paradigm dualisms. In exemplars scholars propose several means of fostering interplay, while existing metaparadigm theories illustrate their use. Reed (1997) suggested that theorists adopt a stratified ontology to view paradigm representations interacting within nested levels of abstraction. For example, Gaventa (1980) employed Lukes' (1974) three "faces of power" as lenses to build a multidimensional theory of quiescence. Spender (1998) advocated using a pluralist epistemology to appreciate how varied forms of knowledge complement and mediate each other. Similarly, Clegg (1990) examined multinational organizations from "multiple modes of rationality," fusing power and institutional perspectives to probe anomalies neglected by contingency theory. Bouchikhi (1998) recommended that theorists view paradigmatic conflicts as dialectical tensions that expose organizational paradoxes. Ybema (1996), for instance, used opposing views of culture to theorize the dynamics of cohesion and division.

METATRIANGULATION: A MAP OF THE THEORY-BUILDING PROCESS

Although in most multiparadigm exemplars theorists apply only one of the reviewed approaches, we view these approaches as supplementary, potentially helping theorists recognize, cultivate, and then accommodate diverse paradigm insights. In the absence of such a strategy, we elaborate and implement Gioia

and Pitre's (1990) vision of metatriangulation: a process of building theory from multiple paradigms roughly analogous to traditional (i.e., single-paradigm) triangulation.

Denzin's (1978) depiction of theoretical triangulation helps conceptualize the process. The phases he proposed approximate multiparadigm approaches: initial groundwork to define the theoretical perspectives to be used (multiparadigm review), data analysis using each lens in turn (multiparadigm research), and theory building to contrast and account for differing interpretations of the data (metaparadigm theory building). Denzin claimed this process challenges theorists to purposefully seek out, rather than avoid or ignore, conflicting interpretations. Yet, he advocated deductively testing opposing views (views that differ yet are grounded within common paradigmatic assumptions) to determine which is the "truth." In contrast, metatriangulation requires applying—with fidelity—multiple paradigms to explore their disparity and interplay and, thereby, arrive at an enlarged and enlightened understanding of the phenomena of interest, as well as the paradigms employed. To contribute a useful map of this theory-building process, we compare metatriangulation to traditional inductive strategies and provide an example of its application (see Table 2).

We propose a process similar to traditional induction, but with key variations designed to respect the assumptions of alternative paradigms. In detailing the process, we contrast each step with activities of well-known strategies—strategies that seek to amplify the potential insights available from three sources: existing literature, empirical data, and theorists' intuition (i.e., common sense and experience; e.g., Eisenhardt, 1989; Glaser & Strauss, 1967; Mintzberg, 1979; Weick, 1989). Table 2 portrays an orderly, sequential process, but, as in traditional induction, building theory from multiple paradigms is messy and far from schematic. Metatriangulation-in-action is highly iterative, as theorists necessarily fluctuate between activities. For instance, the process begins as theorists seek a multiparadigm understanding of the phenomenon of interest. Yet, this base expands and changes as theorists gain new insights into alternative paradigms and review additional literature to address emerging themes and evaluate resulting theory. Similarly, in the last step

TABLE 2
Theory-Building Processes of Traditional Induction and Metatriangulation

Single Paradigm—Traditional Inductive Activity	Multiparadigm		
	Variation of Inductive Activity	Purpose in Metatriangulation	Implications for AMT Study
Phase I: Groundwork			
Specify research question	Define phenomenon of interest	Provide focus, yet enable interpretative flexibility	Encompassed diverse AMT types and theory
Review relevant literature	Focus paradigm lenses—bracket paradigms and locate transition zones	Gain multiparadigm understanding and cognizance of home paradigm	Recognized divides and bridges between existing perspectives
Choose data source	Collect metatheoretical sample (data interpretable from multiple lenses)	Aim lenses at common, empirical referent	Selected case studies of varied AMT contexts and theoretical views
Phase II: Data analysis			
Design analytical process	Plan paradigm itinerary (ordered use of lenses)	Recognize paradigmatic influences; emphasize contrast and retain balance	Moved away from home and dominant paradigm
Systematically code data	Conduct multiparadigm coding	Cultivate diverse data interpretations; accent distinct paradigm insights	Detailed contrasting views of AMT and its implementation
Tabulate and/or exhibit analyses	Write paradigm accounts	Experience paradigm language-in-use; manage accumulating insights	Recognized conflicts and overlaps in images of AMT tensions
Phase III: Theory building			
Develop and test propositions	Explore metaconjectures	Conduct mental experiments; juxtapose paradigm insights	Examined patterns and discrepancies across accounts
Build theory	Attain a metaparadigm perspective	Encompass disparity and complementarity; motivate interplay	Used "space" and "time" to accommodate differing explanations
Evaluate resulting theory	Articulate critical self-reflection	Assess theory quality and the theory-building process	Tracked tensions and paradoxes experienced in own work

theorists evaluate the methods and outcomes of metatriangulation. Critical self-reflection, however, should permeate the process. For while multiparadigm techniques may help extend theorists' peripheral vision dramatically, resulting metaparadigm theory will have roots within the theorists' initial assumptions, requiring them to constantly question their paradigmatic biases.

To aid future uses of metatriangulation, we illustrate each step in the process. In addition to reviewed exemplars, we offer our study of advanced manufacturing technology (AMT). Since its advent in the late 1970s, AMT (e.g., computer-integrated manufacturing) has proven highly problematic and controversial, marking disruptive changes in work, social relations, and organization and fueling uses of disparate paradigm lenses (Alvesson, 1987;

Dean, Yoon, & Susman, 1992). The catalysts for our study were both substantive and epistemological. We were driven by a desire to comprehend the complexity of AMT, as well as the paradigms of AMT researchers. We sought to explore alternative perspectives and their conflicting images of AMT and to build a metaparadigm theory that might contrast, link, and extend existing understandings. Weaving examples from our study throughout the following discussion serves two purposes. First, the study provides a unifying illustration, since other exemplars only depict portions of the theory-building process. Second, it contributes our firsthand experience with the techniques, challenges, and insights of metatriangulation (see Lewis, 1996, for additional details).

Phase I: Groundwork

In order to understand alternative points of view it is important that a theorist be fully aware of the assumptions upon which his own perspective is based. Such an appreciation involves an intellectual journey which takes him outside the realm of his own familiar domain. . . . Only then can he look back and appreciate in full measure the precise nature of his starting point (Burrell & Morgan, 1979: ix).

Laying the groundwork for metatriangulation requires defining the phenomenon of interest, focusing paradigm lenses, and collecting a metatheoretical sample (see Table 2). As in traditional induction, this initial phase delineates boundaries that both constrain and enable theory building (Eisenhardt, 1989). Setting boundaries risks reducing metatriangulation to a "fill-in-the-blanks" exercise, in which theorists use data to support initial paradigmatic views. Yet, such boundaries may help theorists manage potential overload of data and perspectives, make comparisons to extant works, and clarify and critique their own assumptions as they journey through multiple paradigms.

Define phenomenon of interest. Theory building across paradigms begins by selecting a topic of study (Gioia & Pitre, 1990). Traditional induction strategies most often are used to explore phenomena in theoretically sparse fields. Specifying a clear and tentative research question provides focus and enables interpretive flexibility during data analysis (Glaser & Strauss, 1967; Mintzberg, 1979). Metatriangulation, however, is most appropriate for studying multifaceted phenomena characterized by expansive and contested research domains (i.e., with numerous, often conflicting theories). Specifying a research question in multiparadigm inquiry is problematic, for the legitimacy of a question may vary across paradigms. In his influential work, Hassard (1991) faced this challenge by tactfully pairing each lens with a different, paradigm-compatible issue. To enable more direct and potentially insightful comparisons, in other exemplars researchers have advocated broadly defining a common phenomenon of interest. In such studies scholars view the phenomenon of interest as abstract and relational—constructed as theorists use, interpret, and experience it through each paradigm lens (e.g., Graham-Hill, 1996). For instance, in their exemplars scholars have examined such intri-

cate and well-researched phenomena as organizational power (Clegg, 1990; Gaventa, 1980), culture (Martin, 1992; Ybema, 1996), politics (Bradshaw-Camball & Murray, 1991), and work (Alvesson, 1987).

Metatriangulation offers an exceptional means of studying AMT, because this field has been increasingly criticized as vast and polarized, replete with theoretical contradictions that inhibit research comparisons and more comprehensive understanding (Grint, 1991). We defined AMT as operator tasks and computerized machinery that control and execute a production process. This broad definition freed us to explore varied social and technical designs of AMT as well as differing views of its implementation (e.g., systems, labor process, social construction, and critical theories).

Focus paradigm lenses. Reviewing relevant literature enhances traditional induction by helping theorists link emerging theory to extant work and recognize the influence of their own theoretical inclinations (Weick, 1989). A rich theoretical background may stimulate insightful analysis, "sensitizing" theorists to certain features and subtleties in the data (Glaser & Strauss, 1967). Metatriangulation alters the role of theoretical sensitivity dramatically, requiring theorists to focus and then employ divergent paradigm lenses. A two-part review—bracketing paradigms and then locating transition zones—may help theorists gain a multiparadigm understanding of the phenomenon of interest, as well as a greater awareness of their initial or "home" paradigm.

Bracketing entails making the assumptions and selective focus of each perspective explicit, then categorizing extant literature *within* paradigms to accentuate theoretical discrepancies (Gioia & Pitre, 1990). Essentially, brackets delimit the operative scope of disparate lenses, specifying what is and is not of interest—constraining researchers to a manageable field of vision, yet sharpening detail within that purview (Poole & Van de Ven, 1989). In exemplars scholars either classify literature within an extant paradigm typology (e.g., Gioia & Pitre, 1990; Grint, 1991) or create a custom framework (e.g., Alvesson, 1987; Reed, 1996), seeking brackets that match the requisite variety in the literature and that emphasize prominent theoretical conflicts.

Recognizing an author's paradigm, however, may be an arduous and arguable task. Smircich (1983) noted that not only do authors rarely state their paradigm but, often, make the choice unconsciously. She proposed categorizing works according to an author's use of metaphorical language—for example, organizations are social instruments, adaptive organisms, or patterns of symbolic discourse. Others agree (e.g., Cannella & Paetzold, 1994; Willmott, 1993), claiming that a favored paradigm is most recognizable by the use of terms, such as *knowledge*, *discourse*, and *praxis*, that imply all readers will hold a shared meaning.

Next, discovering transition zones between paradigms helps theorists critique the boundaries of their brackets and recognize the potential complementarity of paradigm lenses (Gioia & Pitre, 1990). In exemplars scholars most often explore links between objective- and subjective-oriented paradigms. For instance, structuration (e.g., Weaver & Gioia, 1994) and constructivist (e.g., Kaghan & Phillips, 1998) theories enable study of "objective" institutional artifacts as products and mediums of "subjective" social construction processes. Locating such perspectives reveals how epistemological and methodological assumptions exist along continua. Paradigms may appear incommensurable at the extremes, yet interwoven at their borders. Transition zone theories also suggest bridges across paradigms that may facilitate metatheorizing (Grimes & Rood, 1995).

Like Grint (1991), we bracketed AMT assumptions using Burrell and Morgan's (1979) typology, because its dimensions reflect heated technology debates. Resulting brackets, illustrated in Figure 1, sharpened the focus of each paradigm lens by characterizing their varied views of AMT and its implementation, key research issues, and prevailing theories. This review clarified how most studies emphasize deterministic constraints on AMT implementation or fluid processes of sensemaking by polarizing assumptions of objectivity and subjectivity, and stress the deskilling or skill upgrading potential of AMT by segregating radical change and regulation assumptions, respectively.

We then explored paradigm transition zones. For instance, structuration theory (bridging functionalist-interpretivist views) suggests that actors work through extant work roles and technologies as they attach meanings to a new AMT,

contributing to ongoing changes in their social construction (e.g., Roberts & Grabowski, 1996). Similarly, in radical labor process theory (bridging radical structuralist-radical humanist views) scholars posit that actors' ideologies and rhetoric may prejudice meanings of AMT, while reified institutional artifacts (e.g., structure and authority) reinforce extant ideologies and rhetoric (e.g., Willmott, 1993). Recognizing such bridges helped us question our fictitious paradigm borders and recognize complementary insights during later theory building.

Collect metatheoretical sample. As in traditional induction strategies (e.g., Eisenhardt, 1989; Glaser & Strauss, 1967), data serve as empirical referents, pulling the theorist and the resulting theory closer to the phenomenon of interest than is possible with extant literature alone. Yet, choosing a source of data for multiparadigm inquiry is controversial, since the question of what constitutes data is paradigm laden (Gioia & Pitre, 1990). Managing this dilemma requires collecting a metatheoretical sample: data interpretable from multiple-paradigm perspectives. Although in some exemplars researchers collect different data for use with each lens (e.g., Gioia & Thomas, 1996; Hassard, 1991), using a common data source facilitates comparisons and theory building (Ybema, 1996). From a metalevel, theorists may view data as representations of an empirical reality developed for a purpose/audience and amenable to interpretation/analysis (Stablein, 1996). For example, Bradshaw-Camball and Murray (1991), Martin (1992), and Graham-Hill (1996) collected extensive and unstructured interview data, which could then be analyzed through divergent lenses.

We sought data that would enable us to examine AMT implementation across diverse contexts and apply varied analytical lenses, choosing a fairly unique source: existing case studies. Case studies have undergone a resurgence across paradigms over the past two decades, so they offer a potentially abundant, insightful, and rarely tapped source of metadata (Stablein, 1996). In the field of AMT, case studies have become the "predominant mode of inquiry" (Dean et al., 1992: 204). While examining extant cases had the obvious disadvantage of increasing our distance from original fieldwork and local actors, it offered us the opportunity to explore disparate interpretations of case authors

FIGURE 1
Bracketed Paradigms of Advanced Manufacturing Technology^a

Regulation-----Radical Change	Radical Humanist AMT: Vehicle for communicative distortion Implementation: Process of negotiating rhetoric, identities, and understandings related to AMT work Key issues: Why do actors often use and reinforce dominant ideologies and existing prejudices? How can actors negotiate more democratic understandings of AMT? Theories: Critical and antiorganization theories	Radical Structuralist AMT: Tool for labor domination and control Implementation: Process of social and political determinism, driven by political interests and class differences Key issues: How does the design of AMT machinery and tasks further rationalize and deskill operator work and reinforce existing power asymmetries within the organization? Theories: Orthodox labor process (Marxian); radical Weberian theories
	Interpretivist AMT: Ongoing construction of intersubjective experiences Implementation: Process of sensemaking and learning as actors use and experience AMT Key issues: How do actors develop shared understandings of AMT? How do cultural norms, myths, and symbols influence interpretations? Theories: Social construction and symbolic interactionist theories	Functionalist AMT: Production system for enhancing efficiency and adaptability Implementation: Process of technological determinism, constrained by competitive and organizational conditions Key issues: How do differing AMT design specifications impact production control and flexibility? What methods foster effective implementation? Theories: Contingency, systems, and traditional engineering theories
	Subjective-----Objective	

^a Adapted from Burrell and Morgan (1979).

as well as quoted actors across numerous organizational settings.

We began by seeking a large and eclectic pool of relevant cases. Broadly defining a case (i.e., a comprehensive study of AMT implementation within a specific context) and using diverse case sources suggested by our multiparadigm review (e.g., management, engineering, sociology, and anthropology journals, as well as teaching cases, research monographs, and unpublished papers) helped us locate over 100

case studies. We then theoretically selected 20 cases for detailed analysis. Following Eisenhardt's (1989) suggestions, we chose cases that accented extremes (e.g., highly automated versus labor-intensive AMTs) and remained open to interpretation (e.g., provided elaborate descriptions and extensive quotations from local actors) to foster creative theorizing. However, we also expanded Eisenhardt's criteria to aid multiparadigm analyses. We sought cases representative of each of the four paradigm lenses to contrast

case authors' differing research interests, methods, and rhetoric (see Lewis, 1996, for a complete list of collected cases).

Phase II: Data Analysis

To translate a theory of worldview into one's own language is not to make it one's own. For that one must go native, discover that one is thinking in, not merely translating out of, a language that was previously foreign (Kuhn, 1970: 204).

Like many theory-building strategies, a substantial phase of metatriangulation revolves around data analysis. In multiparadigm inquiry, however, the "analytic detective work" (Mintzberg, 1979) required for traditional induction also requires magnification of paradigm distinctions, while avoiding oversimplified interpretations. Phase II applies techniques that help theorists immerse themselves within alternative paradigms, track down patterns in the data, and create contrasting accounts of the phenomenon of interest (see Table 2). Embracing "foreign" paradigms serves two primary purposes. First, it may deepen theorists' understanding as they learn *experientially* the observational focus, analytical methods, and writing styles of each paradigm. Second, resulting accounts may aid metaparadigm theory building by enabling theorists to juxtapose paradigm interpretations of a common empirical referent (Reed, 1997). As Martin notes, by cultivating conflicting images theorists may explore "unstated assumptions in order to explain why disagreements among . . . perspectives are so deep, vehement, and productive" (1992: 5).

Plan paradigm itinerary. Eisenhardt (1989) claimed that using a systematic series of analyses helps theorists manage their limited information-processing capabilities. Similarly, following an *itinerary* (i.e., a planned order of paradigm analyses) may enhance the journey through multiple paradigms. Regardless of how "parallel" theorists attempt to keep their inductive efforts, insights from previous paradigmatic analyses will exert some influence on later analyses. An itinerary may heighten theorists' awareness of such influence and enable them to better balance contrasting images. Hassard (1991) suggested that theorists' specific interests should guide their choice of itinerary. For instance, in some exemplars scholars have traveled from objective to subjective paradigms,

seeking first broad and generalizable overviews and then more detailed and localized meanings of the phenomenon of interest (e.g., Gioia et al., 1989; Graham-Hill, 1996). Others have used a functionalist lens to highlight formal, managerialist understandings, followed by more critical views to expose fragmentation and conflict (e.g., Bradshaw-Camball & Murray, 1991; Martin, 1992).

We chose our itinerary—functionalist to radical structuralist to interpretivist to radical humanist—for two reasons. First, we felt this route would intensify our own learning experiences, for it reflected a movement progressively away from the comfort of the primary investigator's "home" perspective and the dominant AMT paradigm (functionalist) toward its antithesis (radical humanist). Second, we sought progressively "deeper" and contrasting images of AMT. Functionalist analyses addressed the nature of technical and social systems, while radical structuralist analyses critiqued their impact on operators' skills and power. In the subjective paradigms we viewed descriptions of observable properties and behaviors as "entry points" into more latent social construction processes. Interpretivist analyses accented cultural norms influencing shared meanings, whereas radical humanist analyses critiqued their legitimacy and actors' roles in their maintenance. The disparity of each lens helped unfreeze and loosen our initial assumptions, fostering more creative insights as we continuously elaborated and questioned previous analyses.

Conduct multiparadigm coding. According to Glaser and Strauss (1967), coding entails breaking down, interpreting, and conceptualizing data. Theoretical sensitivity is vital, for theorists' assumptions foster insights and biases. Approaching analysis with diverse questions in mind may help theorists open the data and "see" with greater analytical depth. Multiparadigm inquiry modifies and intensifies the role of theoretical sensitivity. Paradigm lenses suggest opposing research issues and reveal varied interpretations of the data. Yet, conflicting assumptions preclude use of a common analytical approach, requiring theorists to apply respective paradigm methods (Gioia & Pitre, 1990, and Guba & Lincoln, 1998, review varied methods).

Multiparadigm coding is typically a two-part process: theorists become intimate with and then impose alternative spins on the data. In the

initial analysis, taking detailed notes helps theorists develop their first impressions of nuances and patterns in the data. Theorists then follow their paradigm itinerary, "reading" the data through each lens (Morgan, 1983). Their interpretations become a combination of *what they already know, what they read, and which lens they bring to the analysis*, thereby enabling construction of the differing insights enabled by each paradigm. Recoding the data during each subsequent analysis concentrates efforts to detail and contrast understandings of emerging themes.

Exemplars depict variations of this activity. Graham-Hill (1996) analyzed his data using alternative case-building methods, which ranged from conventional approaches (e.g., Yin, 1989) to dramatism (e.g., Mangham & Overington, 1983). Martin (1992) used a different technique, applying her three lenses as sensitizing devices to expose multiple meanings of an organizational culture. She coded actors' quotes that depicted perceptions of a clear, unified culture as "integration;" of varied subcultural views as "differentiation;" and of conflicting feelings and ambiguity as "fragmentation."

In our study multiparadigm coding proved a data- and mind-opening experience. Paradigm brackets suggested key issues to aid and differentiate analyses (see Figure 1). We also began each paradigm analysis by coding cases written from the same perspective, using case authors' focus, language, and methods to guide our coding of remaining cases. Functionalist coding entailed comparative and causal analyses of surface manifestations (e.g., managerial explanations and AMT design specifications) to converge on generalizable constructs and relationships (e.g., Eisenhardt, 1989). In the radical structuralist paradigm, we used dialectical cycles of observation and critique (e.g., Benson, 1977) to reveal how labor-control capabilities of AMT were reinforced by interrelated institutional artifacts (e.g., organizational structure) and wider socioeconomic structures (e.g., social classes). Interpretivist analyses involved coding language and symbols to depict actors' sense-making processes (e.g., Guba & Lincoln, 1989). Hermeneutic techniques helped us identify meanings shared by subcultural members regarding AMT and work-related roles. Lastly, for radical humanism, we analyzed hegemonic ideologies and meanings (e.g., Steffy & Grimes,

1986). Critically reinterpreting cases and our accumulated notes, we coded deterministic, masculine, and managerially sympathetic discourses to expose prejudiced rhetoric used by organizational actors, case authors, and ourselves. Multiparadigm analyses produced four sets of codings, each addressing distinct yet interwoven facets of the cases: conceptualizations of AMT and problematic implementation processes.

Write paradigm accounts. In tabulating or exhibiting results of data analyses, researchers organize evidence to aid traditional induction (Eisenhardt, 1989; Mintzberg, 1979). Metatriangulation expands this activity, as theorists use codings to *write distinct accounts* of the phenomenon of interest. Writing serves three purposes. First, it inscribes paradigmatic understandings into cohesive representations, helping theorists manage the diverse insights enabled by multiparadigm analyses. Second, writing may deepen theorists' understandings as they experience paradigm language-in-use. Comparing each account to respective paradigm literature may help theorists ensure that representations proliferate rather than subjugate or homogenize paradigm differences. Third, by writing *after* completing analyses, theorists may focus accounts on themes that span paradigms to emphasize conflicting images and aid metatheorizing. Martin (1992), for instance, illustrated how divergent lenses fostered different perceptions of an organization's three cultural themes: egalitarianism, innovation, and concern for employees' well-being. Similarly, Bradshaw-Camball and Murray's (1991) accounts each depict a coherent yet limited understanding by addressing varied issues regarding the structure, process, and outcomes of organizational politics.

We concentrated our accounts on the theme of tensions. Across case studies, opposing demands, interests, and perceptions frustrated AMT implementation. Yet, paradigm lenses revealed differing conflicts and vicious cycles. Comparing findings from our data analyses to extant paradigmatic literature helped us hone each account and detail the variations in paradigm insights. An abbreviated reading of the resulting accounts (see the Appendix) shows each as providing an equally plausible, internally consistent, but partial representation, highlighting the need for a more comprehensive

understanding of the complex and disruptive nature of AMT.

Phase III: Theory Building

We stand in a turmoil of contradictions. . . . Paradox lives and moves in this realm; it is the art of balancing opposites in such a way that they do not cancel each other but shoot sparks of light across their points of polarity. It looks at our desperate either/ors and tells us they are really both/ands—that life is larger than any of our concepts and can, if we let it, embrace our contradictions (Mary C. Morrison, in Smith & Berg, 1987: 3).

Building theory from data requires theorists to make "creative leaps"—to break away from the simplified and expected and explain phenomena in new light (Mintzberg, 1979: 584). Yet, in metatriangulation leaps are to a level above and beyond paradigms, for when "one abstracts highly enough, the differences between entrenched research practices blur, revealing the contours of the research landscape" (Stablein, 1996: 510). Multiparadigm analyses support and elaborate disparate views, adding depth to theorists' understandings of the phenomenon and the paradigms used. Building theory, however, requires theorists to transcend paradigm dualisms and to *think paradoxically*: to consider conflicting views simultaneously. Metaparadigm techniques help theorists explore metaconjectures, attain a metaparadigm perspective, and articulate their self-reflection (see Table 2).

Explore metaconjectures. Exploring metaconjectures heeds and extends Weick's (1989) call for theorists to conduct numerous and diverse mental experiments. Metaconjectures denote propositions interpretable from multiple paradigms. Theorists iterate between reviewed literature, their multiparadigm analyses, and their own intuition to explore divergent views of themes that span paradigm accounts. Exemplars suggest two techniques that may help theorists develop and "test" metaconjectures. First, conjecture inversion entails reframing a broad question within multiple paradigms (Gioia & Pitre, 1990). Looking for what is unexpected or unanswered in paradigm accounts, theorists may examine how aspects of a situation are viewed as an anomaly or explained through alternative lenses. Second, conversation techniques help theorists probe paradigm debates and discover creative means to justify contradictions (Grimes & Rood, 1995). By juxtaposing par-

adigmatic insights, discrepant explanations may appear to be interrelated yet address varied temporal and spatial facets of the phenomenon (Poole & Van de Ven, 1989).

We used conjecture inversion to investigate why tensions rise during AMT implementation. We asked, "Why do conflicting demands (functionalist), political interests (radical structuralist), interpretive schemes (interpretivist), and social identities (radical humanist) intensify and inhibit change?" Paradigm lenses revealed how the flexibility and ambiguity of computerization exacerbate existing tensions, yet they suggested that inertial constraints, power asymmetries, subcultural norms, or communicative distortions, respectively, frustrate more innovative designs and mutual understandings of AMT. Conversation techniques then helped us account for such discrepancies. Besides using hypothetical conversations, we purposefully engaged in debates among ourselves, since we were grounded in opposing paradigms, and with other theorists attuned to paradigms with which we were less familiar. We came to view paradigms as embracing different spatial and temporal dimensions.

Examining AMT from differing "spaces" (a metaphor for hierarchy and divergent occupational interests) aided our understanding of the skill upgrading-deskilling debate. Those with regulation views voiced managerial concerns, noting the new routines and greater conceptual skills needed for operators and designers to work through computerization, and those with radical views stressed labor interests, exposing control mechanisms and dominant ideologies that reinforce extant power relations. Varied temporal perspectives (a metaphor for structure and enactment processes) suggested stable, observable properties and more latent cognitive and social dynamics. Objective lenses revealed the constraints of material artifacts and institutionalized practices, and subjective views indicated the flux of ongoing sensemaking. Thus, the four accounts summarized in the Appendix, *in conjunction*, appeared necessary to comprehend the intricate and disruptive nature of AMT implementation.

Attain a metaparadigm perspective. Traditional inductive theory provides an ordered set of assertions regarding the phenomenon of interest, both grounded in specific data and sufficiently abstract to enable generalizability (Gla-

ser & Strauss, 1967). Multiparadigm inquiry broadens conventional definitions of theory to denote a coherent understanding capable of accommodating diverse representations (Gioia & Pitre, 1990). Theorists seek a metaparadigm perspective from which they may recognize the interplay of conflicting yet interdependent paradigm insights. In exemplars scholars advise applying an inclusive theoretical stance, framework, or concept that may serve as a "point of contact" across paradigms. For instance, Schultz and Hatch (1996) suggested employing a post-modern view to recognize the disparity and similarity of essentially modern paradigms. Reed (1997) advocated building a multidimensional framework, and Bouchikhi (1998) proposed using dialectics and paradox to contribute a rich, thick understanding of the phenomenon of interest.

Existing metaparadigm theories illustrate the use and value of such techniques. For example, Gaventa (1980) sought to explain why coal miners in an Appalachian town remained silent, rather than resisted unsafe and demoralizing work conditions. Applying Lukes' (1974) three lenses, he detailed varied dimensions of power and their mechanisms of control: behavioral (e.g., attempts at interpersonal influence and current supervisory practices), structural (e.g., labor contracts and institutionalized divisions of labor), and ideological (e.g., dominant discourses and assumptions). Gaventa, however, transcended Luke's distinctions, linking these control mechanisms to explain how the subtle interactions of dimensions preserve quiescence. While managers mobilize resources to ensure that infrequent uses of miners' power are ineffective, formalized contracts and practices maintain power asymmetries, and ongoing uses of the hegemonic rhetoric of consensus influence miners' preferences and reduce their political consciousness. The result is an elaborate and contextualized vision of power as observable, embedded, and continuously reproduced.

Ybema (1996) used Martin's (1992) divergent integration and differentiation lenses to move beyond discrepant paradigm accounts toward a metaparadigm theory of organizational cohesion and division. Examining a small, Dutch amusement park with the integration lens, Ybema revealed a strong organizational culture marked by shared myths and collegiality; the differentiation lens exposed group distinctions and practices of malicious gossiping. Ybema

creatively accounted for these contradictions in two ways. First, he conceptualized cultural manifestations as mediums through which mixed meanings can be expressed. For instance, stories of the organization's traditions and achievements fostered a common sense of pride and solidarity. Yet, "old timers" used the stories to romanticize the past and their roles in company history, bolstering their social identities and distinctions from the "new professionals" invading management. Second, using a dramaturgical metaphor, Ybema viewed lenses as lighting differing stages on which social interactions are played. By banishing overt signs of conflict, cultural norms encouraged openness and amicability "on stage" (e.g., in meetings and hallways) and pushed animosities "off-stage" (e.g., to conversations behind closed doors). Paradoxically, such separate shows became inversions of each other. Public displays upheld norms of agreement and cohesion, and private gossiping reinforced feelings of within-group intimacy and between-group discord.

To accommodate divergent views of AMT tensions, we applied the notion of paradox. Paradoxes denote social constructions, formed as actors polarize interrelated phenomena to comprehend uncertainty and complexity. Yet, polarities may become reified over time, inhibiting actors from recognizing and managing their interplay (Bouchikhi, 1998). During AMT implementation, dramatic changes in computerization revealed the inadequacies of existing polarities, such as artificial distinctions between demands for control and flexibility or between the expertise of AMT designers and operators. Such revelations appeared capable of fostering innovation and enlightenment, as well as rigidity and domination. Some cases demonstrated the value of rethinking assumptions regarding technology and work, negotiating more democratic roles in production, and experimenting with creative AMT designs and organizational structures. More often, though, actors clung to past polarities, fueling vicious cycles. Uses of extant ideologies, practices, and institutional artifacts sparked negative consequences that further intensified actors' desires for order and simplicity. For example, designers typically viewed AMT as an opportunity to bolster their control over production and labor. Yet, limiting operator involvement in the implementation process, stressing the "power" of computers, and

formalizing operator tasks resulted in highly centralized systems that separated programming from execution and proved unwieldy in use. Meanwhile, operators sought to retain control over their craft. However, emphasizing the masculinity of their manual skills and their wariness of computerization and management intentions inhibited operators from developing greater conceptual skills and arguing for more influential roles in implementation.

Weaving together paradigm accounts, we theorized the interplay of objectivity (e.g., formal AMT designs and engrained divisions of labor) and subjectivity (e.g., fluid processes of sense-making and identity construction). While regulation stances focus on common routines and enact cohesive occupational subcultures, radical stances critique subtle mechanisms of control and expose continuing distortions of expertise that may subvert attempts at more open communications across levels of the organizational hierarchy.

Articulate critical self-reflection. Metatriangulation concludes with a critique of the resulting theory and the theory-building process. When assessing the quality of a theory, theorists find that traditional criteria—validity and internal consistency (Eisenhardt, 1989)—are incongruous with alternative paradigms, since they focus on reducing ambiguity and diversity (Morgan, 1983). To respect varied paradigm objectives, metatriangulation involves expanded criteria: creativity, relevance, and comprehensiveness. A creative theory contributes thought-provoking means of considering divergent perspectives, while relevance depends upon its potential to encourage interparadigm discourse and to enhance correspondence between theory and multifaceted organizational reality (Poole & Van de Ven, 1989). With metatriangulation scholars strive not to find the truth but to discover comprehensiveness stemming from diverse and partial worldviews (Gioia & Pitre, 1990). Ideally, metaparadigm theory both accommodates and challenges opposing paradigm insights, and it reflects the ambiguity, complexity, and conflicts experienced by organizational actors.

Nevertheless, such results present a particular—albeit a more expansive and inclusive—view. Critical self-reflection may help theorists avoid promoting closure within the confines of paradigm brackets or a metaparadigm theory and appraise the influence of their personal in-

terests on the inductive process (Willmott, 1993). In some multiparadigm exemplars, theorists apply postmodern notions to critique their use of existing paradigms (e.g., Hassard, 1991; Martin, 1992). Others keep "field notes" to continuously reflect on the impact of their paradigmatic biases and to present tentative findings to their research subjects to reach congruence on meaning (e.g., Graham-Hill, 1996).

In the AMT study, tracking our emerging perceptions helped us to remain acutely aware of paradoxes occurring in our own work. For example, one author realized that her theoretical predilections, emanating from a primarily functionalist background, were enhancing and frustrating her insights. As she ventured further from her home paradigm, she increasingly noticed ideological conflicts between paradigms and social tensions apparent in colleagues' concerns about her "radical" and "risky" research, threatening to guide her back to the functionalist mainstream. Managing this paradox became an ongoing, self-reflective effort, as she would scrutinize her notes, the alternative paradigm accounts, and the metaparadigm theory for managerially biased rhetoric. In retrospect, such experiences became interwoven within the theory-building process, deepening our appreciation of the value and challenges of multiparadigm inquiry.

THEORY-BUILDING IMPLICATIONS

Metatriangulation is not a substitute for single-paradigm theory building but, rather, an alternative for exploring complex phenomena from disparate theoretical and epistemological perspectives. Indeed, we view this process as an extension of traditional strategies aimed at enhancing the potential insights available from existing literature, data, and theorists' intuition. Metatriangulation follows many of Weick's (1989) prescriptions for building theory using "disciplined imagination," deliberately and dramatically increasing the quantity and diversity of literature reviewed, of analytical methods used, and of conjectures examined. To further array metatriangulation among extant strategies, we conclude by discussing its advantages, limitations, and future applications.

Advantages

We propose that metatriangulation may guide theorists in epistemological and substantive directions. Epistemologically, this theory-building strategy may direct attention to the impact of (1) theorists' interests on their choice of research paradigms, methods, and topics (Habermas, 1971); (2) epistemology on substantive theory building, since the latter is a derivative of the former; and (3) power on the creation of knowledge (Foucault, 1980). Exploring "foreign" paradigms offers theorists a potentially frame-breaking experience. By making assumptions and the learning process explicit, metatriangulation may help theorists gain an appreciation of possible knowledge and reduce their commitment to a favored and provincial point of view. Theorists may recognize that theory building is not solely a methodical, rule-bound process but also an ideological, political, and moral engagement through which they make and remake themselves (Morgan, 1983).

Substantively, metatriangulation facilitates a shift from provincial toward more rich, contextualized, and multidimensional theory. Grappling with theoretical contradictions may enable theorists to build theory more attuned to the intricacy and paradoxes of organizational life (Poole & Van de Ven, 1989; Teunissen, 1996). Multiparadigm approaches help theorists match the requisite variety of organization theory and investigate the diversity experienced (or constructed) by organizational actors (Schultz & Hatch, 1996). Bouchikhi (1998) has claimed that by deploying multiple paradigms, theorists may help organizational actors comprehend and manage demands that appear logical in isolation, yet contradictory and absurd in connection—for example, the need for control and flexibility, collective coordination and individual expression, secure internal systems and open external systems, continuity and change, and deliberate decision making and emergent serendipity.

The resulting metaparadigm theory may—if subsequent research, theorizing, and scholarly discourse support its plausibility—offer a template for extended theory/research. Future multiparadigm inquiry may retain concerns for organizational efficacy, yet critique institutional artifacts and reflect local meanings, "thicken- ing" descriptions to more fully represent subtle

technological, social, and political intricacies. In exploring divergent views, theory and scholarly debate may become more complex and productive, muting objectivity-subjectivity dualisms and contributing insights for diverse organizational actors rather than prescriptions for their control by elites. Substantive knowledge produced from such efforts may be contextualized by local meanings and the paradigms explored, yet researchers' reflections on the bounds of their methods and understandings may become more abundant, candid, and legitimate.

Limitations

While theory building is always a process of sensemaking, influenced by theorists' underlying assumptions (Weick, 1989), the inherently provocative nature of multiparadigm inquiry revolves around the question "Can you ever escape your current or home paradigm?" Although this issue may continue to be contested, metatriangulation pulls together existing multiparadigm approaches to help theorists recognize and address this challenge at every phase of the theory-building process.

The initial groundwork phase requires theorists to make their paradigmatic assumptions explicit. Yet, critics warn that paradigm bracketing may reproduce the very dualisms it seeks to transcend (e.g., Deetz, 1996). To avoid reifying paradigm boundaries in metatriangulation, theorists must critique the biases of each lens and locate transition zone perspectives. Brackets should be viewed as valuable, albeit fictitious, heuristics for distinguishing disparate views, permitting a greater breadth of understanding than possible within the bounds of a single paradigm. The goal, as Morgan explains, is to

move beyond reproduction of the differences that divide us to an appreciation of why we are divided. In doing so, we arrive at the only powerful means of assessing the nature and limitations of research practice—by acquiring a capacity for knowing what we are doing, why we are doing it, and how we might do it differently if we so choose" (1983: 382).

Nevertheless, theorists must constantly question the limits of their chosen lenses and whether their efforts foster paradigm proliferation or tenacity (Feyerabend, 1979).

The data analysis phase requires theorists to immerse themselves within each paradigm. Critics, however, challenge the very possibility of embracing other perspectives, noting the potential for ethnocentric bias—contamination of paradigm accounts from the theorists' home culture (e.g., Deetz, 1996). Parker and McHugh (1991) suggested that a more realistic approach is behaving "as if" you are a member of a paradigm community. Conducting separate paradigm analyses helps respect the interests and assumptions of alternative research communities (Hassard, 1991). Resulting accounts may then serve as representations—images of an empirical reality sharpened by divergent lenses—to help theorists comprehend the varied insights and interpretations across paradigms, for, as with anthropological methods, theorists may become steeped in less familiar or even foreign paradigm cultures, but they seldom ever become part of them.

The theory-building phase requires attaining a metaparadigm perspective; however, this goal is equally provocative. Critics (e.g., Parker & McHugh, 1991; Scherer, 1998) ask, "Where does a theorist 'stand' when viewing paradigm representations simultaneously?" In some exemplars researchers see this phase as an exercise in paradoxical thinking, pushing theorists to recognize the complementarity and disparity of paradigm lenses (e.g., Gioia & Pitre, 1990; Poole & Van de Ven, 1989; Ybema, 1996). From this alternative realm of abstraction, each paradigm is seen as contributing a layer of meaning. Paradigm lenses provide varied "puzzle-solving devices that bridge the gap between the image of the phenomena and the phenomena itself" (Morgan, 1983: 21). Critical self-reflection aids recognition of both the theorist and theorized as part of a whole, as metatriangulation explores and critiques the process of knowledge creation, while promising a greater explanatory potential.

Future Applications

As we mentioned earlier, metatriangulation is particularly appropriate for investigating vibrant and vast domains of organization theory, marked by continuing debates and/or contradictory findings. For instance, Gioia and Pitre (1990) proposed applying metatriangulation to explore communication and socialization, and Schultz

and Hatch (1996) suggested examining issues of organizational identity, learning, and cognition. During our study, we recognized heated debates in domains of other organizational technologies, such as self-managed work teams, total quality management, and just-in-time inventory practices, indicative of possible research phenomena. Our paradigm lenses also provided highly varied images of broader issues of trust, authority, and control. As Teunissen (1996) claims, drastic changes in technology, workforce diversity, competition, and globalization are sparking the use of alternative lenses and increasing the need for understandings that accommodate, rather than oversimplify or overrationalize, organizational tensions.

Calls for a return to an intellectual orthodoxy—a common, coherent, and hegemonic paradigm (e.g., Donaldson, 1985; Pfeffer, 1997)—or continued paradigm proliferation and polarization—a postmodern approach to unbridled relativism (e.g., Feyerabend, 1975; Jackson & Carter, 1993)—are increasing in organization theory's "contested terrain" (Reed, 1996). Yet, contributing more insightful, innovative, and comprehensive theory for the new millennium may require deeper awareness of alternative modes of inquiry and their intricate connections.

Multiparadigm inquiry holds considerable, and largely unmet, potential for extending existing understandings of complex and paradoxical organizational phenomena. This article provides an extensive guide to multiparadigm exemplars and an explicit map for building theory from multiple paradigms. By imposing a systematic framework on the inherently messy process of theory building, metatriangulation may help theorists recognize the focus and blinders enabled by divergent paradigm lenses, cultivate their contrasting representations, and accommodate their disparate insights. The resulting experience may correspond to Popper's provocative yet optimistic note:

I do admit that at any moment we are prisoners caught in the framework of our theories; our expectations; our past experiences; our language. But we are prisoners in a Pickwickian sense; if we try we can break out of our frameworks at any time. Admittedly, we shall find ourselves again in a framework, but it will be a better and roomier one; and we can at any moment break out of it again (Popper, 1970: 86).

APPENDIX

MULTIPARADIGM ACCOUNTS: TENSIONS OF ADVANCED MANUFACTURING TECHNOLOGY

Our **functionalist account** represented AMT designs as systemic interactions between task programs (degree of work formalization) and machinery programs (degree of computerization) that may enhance process flexibility and control. Yet, organizations struggled to meet *contradictory demands* for innovation and efficiency. While some experimented with creative designs (e.g., autonomous operator teams responsible for computer programming), most were constrained by existing routines and logics. Vicious, inertial cycles appeared as actors reacted to new AMT problems (e.g., bottlenecks and unreliable machinery) by following past patterns (e.g., engineers further augmented task and machinery programs to improve process control, which exacerbated system sensitivity).

Our **radical structuralist account** represented AMT as a technocratic mechanism enabling designers (managers and engineers) to objectify their interests within less obtrusive labor controls, such as computerized monitoring. AMT implementation typified a dialectical process fueled by *opposing political interests*. Designers' need for operator skills, yet drive to increase existing power asymmetries, and operators' desire for craft control, yet wariness of computerization and management intentions, often led to crises (e.g., production accidents and resistance). While operators occasionally used these opportunities to reassert the value of their skills, designers often claimed crises as excuses to exclude operators from the implementation process and further rationalize production, which intensified conflicts.

Our **interpretivist account** represented local meanings of AMT and work, emerging through actors' experiences with AMT and each other. Actors sought to make sense of their more conceptual and ambiguous computerized tasks. Open communications across occupational subcultures occasionally aided development of new and shared languages and conceptual skills. Yet, operator and designer subcultures often filtered social interactions through their *conflicting interpretive schemes*. As anxiety over changes intensified, subcultures would interpret production problems and each other's be-

haviors in ways that reaffirmed their occupational norms and beliefs about their respective competencies, furthering misunderstandings between subcultures.

Our **radical humanist account** represented the flexibility of computerization and more homogenized conceptual work of actors as exposing the illegitimacy of *mutually exclusive social identities* (i.e., "operator" and "designer"). Some actors engaged in enlightening debates, negotiating more democratic meanings of AMT and their roles in its programming. Yet, more often, turf wars erupted as actors mystified their specialized expertise. Designers often emphasized their technical acumen and the "power" of computers, whereas operators stressed the value of physical labor and the virility of their manual skills. Cycles of communicative distortion spiraled as actors tried to reproduce notions of superiority and masculinity, reverting to past class and gender prejudices.

REFERENCES

- Allison, G. T. 1971. *Essence of decision: Explaining the Cuban Missile Crisis*. Boston: Little Brown.
- Alvesson, M. 1987. *Consensus, control and critique: Three paradigms of work in organization research*. Aldershot, England: Avebury.
- Astley, W. G., & Van de Ven, A. H. 1983. Central perspectives and debates in organizational theory. *Administrative Science Quarterly*, 28: 245-273.
- Benson, J. K. 1977. Organizations: A dialectical view. *Administrative Science Quarterly*, 22: 1-21.
- Bouchikhi, H. 1998. Living with and building on complexity: A constructivist perspective on organizations. *Organization*, 5: 217-232.
- Bradshaw-Camball, P., & Murray, V. 1991. Illusions and other games: A trifocal view of organizational politics. *Organization Science*, 2: 379-398.
- Burrell, G., & Morgan, G. 1979. *Sociological paradigms and organizational analysis*. Portsmouth, NH: Heinemann.
- Cannella, A. A., Jr., & Paetzold, R. L. 1994. Pfeffer's barriers to the advance of organizational science: A rejoinder. *Academy of Management Review*, 19: 331-342.
- Clegg, S. 1990. *Modern organizations*. Thousand Oaks, CA: Sage.
- de Cock, C., Rickards, T., Weaver, G. R., & Gioia, D. A. 1995. A rejoinder and reply from Weaver and Gioia. *Organization Studies*, 16: 669-676.
- Dean, J. W., Jr., Yoon, S. J., & Susman, G. I. 1992. Advanced manufacturing technology and organization structure: Empowerment or subordination? *Organization Science*, 3: 203-229.

- Deetz, S. 1996. Describing differences in approaches to organization science: Rethinking Burrell and Morgan and their legacy. *Organization Science*, 7: 1991-2007.
- Denzin, N. K. 1978. *The research act*. New York: Wiley.
- Donaldson, L. 1985. *In defense of organization theory: A reply to the critics*. Cambridge, England: Cambridge University Press.
- Eisenhardt, K. M. 1989. Building theories from case study research. *Academy of Management Review*, 14: 535-550.
- Feyerabend, P. 1975. *Against method*. London: New Left Books.
- Foucault, M. 1980. *Power/knowledge*. New York: Pantheon.
- Gaventa, J. 1980. *Power and powerlessness: Quiescence and rebellion in an Appalachian valley*. Urbana, IL: University of Illinois Press.
- Gioia, D. A., Donnellon, A., & Sims, H. 1989. Communication and cognition in appraisal. *Organization Studies*, 10: 503-529.
- Gioia, D. A., & Pitre, E. 1990. Multiparadigm perspectives on theory building. *Academy of Management Review*, 15: 584-602.
- Gioia, D. A., & Thomas, J. B., 1996. Identity image, and issue interpretation: Sensemaking during strategic change in academia. *Administrative Science Quarterly*, 41: 370-403.
- Glaser, B. G., & Strauss, A. L. 1967. *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.
- Graham-Hill, S. 1996. *Small business strategy: A multiparadigm perspective*. Unpublished doctoral dissertation, University of Kentucky, Lexington.
- Grimes, A. J., & Rood, D. L. 1995. Beyond objectivism and relativism: Descriptive epistemologies. In J. P. Jones III, W. Natter, & T. R. Schatzki (Eds.), *Objectivity and its other*: 161-178. New York: Guilford.
- Grint, K. 1991. *The sociology of work: An introduction*. London: Polity Press.
- Guba, E. G., & Lincoln, Y. S. 1989. *Fourth generation evaluation*. Newbury Park, CA: Sage.
- Guba, E. G., & Lincoln, Y. S. 1998. Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *The landscape of qualitative research*: 195-220. Thousand Oaks, CA: Sage.
- Habermas, J. 1971. *Towards rational society*. London: Heinemann.
- Hassard, J. 1991. Multiple paradigms and organizational analysis. A case study. *Organization Studies*, 12: 275-299.
- Jackson, N., & Carter, P. 1993. "Paradigm wars": A response to Hugh Willmott. *Organization Studies*, 14: 721-725.
- Kaghan, W., & Phillips, N. 1998. Building the Tower of Babel: Communities of practices and paradigmatic pluralism in organization studies. *Organization*, 5: 191-216.
- Kuhn, T. S. 1970. *The structure of scientific revolutions*. Chicago: University of Chicago Press.
- Lee, A. S. 1991. Integrating positivist and interpretivist approaches to organizational research. *Organization Science*, 2: 342-365.
- Lewis, M. W. 1996. *Advanced manufacturing technology design: A multiparadigm study*. Unpublished doctoral dissertation, University of Kentucky, Lexington.
- Lukes, S. 1974. *Power: A radical view*. London: Macmillan.
- Mangham, I. L., & Overington, M. A. 1983. Dramatism and the theatrical metaphor. In G. Morgan (Ed.), *Beyond method*: 219-233. Beverly Hills, CA: Sage.
- Martin, J. 1992. *Cultures in organization*. Oxford, England: Oxford University Press.
- Mintzberg, H. 1979. An emerging strategy of "direct" research. *Administrative Science Quarterly*, 24: 582-599.
- Morgan, G. (Ed.) 1983. *Beyond method*. Newbury Park, CA: Sage.
- Morgan, G. 1997. *Images of organization*. Thousand Oaks, CA: Sage.
- Organization*. 1998. 5(2, Special Issue).
- Parker, M., & McHugh, G. 1991. Five texts in search of an author: A response to John Hassard's "Multiple paradigms and organizational analysis." *Organization Studies*, 12: 451-456.
- Pfeffer, J. 1997. Mortality, reproducibility, and the persistence of styles of theory. *Organization Science*, 6: 681-686.
- Pondy, L., & Boje, D. M. 1981. Bring the mind back in. In W. Evan (Ed.), *Frontiers in organization and management*: 83-101. New York: Praeger.
- Poole, M. S., & Van de Ven, A. H. 1989. Using paradox to build management and organization theories. *Academy of Management Review*, 14: 562-578.
- Popper, K. 1970. Normal science and its dangers. In I. Lakatos & A. Musgrave (Eds.), *Criticism and the growth of knowledge*: 51-58. Cambridge, England: Cambridge University Press.
- Reed, M. 1996. Organizational theorizing: A historically contested terrain. In S. R. Clegg, C. Hardy, & W. R. Nord (Eds.), *Handbook of organization studies*: 409-423. Thousand Oaks, CA: Sage.
- Reed, M. 1997. In praise of duality and dualism: Rethinking agency and structure in organizational analysis. *Organization Studies*, 18: 21-42.
- Roberts, K. H., & Grabowski, M. 1996. Organizations, technology, and structuring. In S. R. Clegg, C. Hardy, & W. R. Nord (Eds.), *Handbook of organization studies*: 409-423. Thousand Oaks, CA: Sage.
- Scherer, A. G. 1998. Pluralism and incommensurability in strategic management and organization theory: A problem in search of a solution. *Organization*, 5: 147-168.
- Schultz, M., & Hatch, M. J. 1996. Living within multiple paradigms: The case of paradigm interplay in organizational culture studies. *Academy of Management Review*, 21: 529-557.
- Smircich, L. 1983. Concepts of culture and organizational analysis. *Administrative Science Quarterly*, 28: 339-358.

- Smith, K. K., & Berg, D. N. 1987. *Paradoxes of groups*. San Francisco: Jossey-Bass.
- Sponder, J.-C. 1998. Pluralist epistemology and the knowledge-based theory of the firm. *Organization*, 5: 233-256.
- Stablein, R. 1996. Data in organization studies. In S. R. Clegg, C. Hardy, & W. R. Nord (Eds.), *Handbook of organization studies*: 509-525. Thousand Oaks, CA: Sage.
- Steffy, B. D., & Grimes, A. J. 1986. A critical theory of organization science. *Academy of Management Review*, 11: 322-336.
- Sutton, R. I., & Rafaeli, A. 1988. Untangling the relationship between displayed emotions and organizational sales: The case of convenience stores. *Academy of Management Journal*, 31: 461-487.
- Teunissen, J. 1996. Paradoxes in social science and research. In W. Koot, I. Sabelis, & S. Ybema (Eds.), *Contradictions in context*: 17-38. Amsterdam: Vrije Universiteit.
- Weaver, G. R., & Gioia, D. A. 1994. Paradigms lost: Incommensurability vs. structurationist inquiry. *Organization Studies*, 15: 565-590.
- Weick, K. E. 1989. Theory construction as disciplined imagination. *Academy of Management Review*, 14: 516-531.
- Willmott, H. 1993. Breaking the paradigm mentality. *Organization Studies*, 14: 681-719.
- Wittgenstein, L. 1963. *Philosophical investigations*. Oxford, England: Blackwell.
- Yin, R. K. 1989. *Case study research: Design and methods*. Newbury Park, CA: Sage.
- Ybema, S. 1996. A duck-billed platypus in the theory and analysis of organizations: Combinations of consensus and dissensus. In W. Koot, I. Sabelis, & S. Ybema (Eds.), *Contradictions in context*: 39-61. Amsterdam: Vrije Universiteit.
- Zey-Ferrell, M., & Aiken, M. 1981. *Complex organizations: Critical perspectives*. Glenview, IL: Scott, Foresman.

Marianne W. Lewis received her Ph.D. in management from the University of Kentucky. She is currently an assistant professor of management at the University of Cincinnati. In her research she explores tensions, conflicts, and paradoxes that impede and enable innovation, particularly in the areas of advanced manufacturing technology, product development, and organization theory.

Andrew J. Grimes received his Ph.D. in management from the University of Minnesota. He is currently a professor of management and a member of the Committee for Social Theory at the University of Kentucky. His research interests include alternative organizations, power, epistemology, critical perspectives on management, and radical organization theory.

Copyright of *Academy of Management Review* is the property of Academy of Management and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.