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## **A SELECTIVE REVIEW OF TIME ASSUMPTIONS IN STRATEGY RESEARCH**

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Concepts of time vary dramatically across individuals and cultures. We draw from work in anthropology, psychology, sociology, and management to identify five time dimensions that guide our review and discussion of dynamic strategic management research. Although strategy researchers incorporate time in many ways, they generally ignore a subjective view of time and the temporal perceptions of actors in their models. We conclude by suggesting how strategy researchers and practitioners can incorporate an unambiguous and multifaceted view of time explicitly into their work.

And he is not likely to know what is to be done unless he lives in what is not merely the present, but the present moment of the past, unless he is conscious, not of what is dead, but of what is already living (Eliot, 1920: 53).

Strategy scholars working today generally prescribe that research should incorporate temporal aspects of strategic choices. Freeman and Boeker (1984) point out that many definitions of strategy conceptualize it dynamically as a flow or stream of organizational actions. Since Porter (1991) advocated a dynamic theory of strategy, strategy researchers have emphasized industry dynamics, organizational change, and the timing of strategic choices. Some researchers have supplemented previously static perspectives with temporal elements. For example, dynamic strategy researchers have adapted static diversification research to examine how quickly a firm should diversify, what organizational form(s) diversified firms adopt over time, and how quickly the benefits to diversification appear (Chang, 1996; Galunic & Eisenhardt, 1996; Haveman, 1993; Markides & Williamson, 1994; Mosakowski, 1997; Russo, 1991).

Even though much strategy research either focuses on or at least controls for aspects of time, we find little or no discussion concerning how assumptions about time relate to strategic dynamics. At best, empirical strategy researchers address temporal assumptions indirectly by relying upon methodological discussions of time in other disciplines, such as Tuma and Hannan's (1984) work on social dynamics and

Abbott's (1991) work on sequences within organizations.<sup>1</sup> At worst, time is incorporated into theories and empirical models of firm dynamics with virtually no attention to assumptions about time.

Our purpose here is to review and critique how researchers incorporate time into dynamic strategy research. We introduce diverse views of time and propose a five-part classification of time dimensions. We also examine temporal assumptions employed in strategy research using these five time dimensions. We consider whether existing management research concentrates on what Bluedorn and Denhardt call "an objective concept of time, one that is unitary (subject to only one interpretation), linear (progressing steadily forward from past to present to future), and mechanical (containing discrete moments subject to precise measurement)" (1988: 302). Finally, we discuss the implications of diverse time assumptions for strategic management researchers and practitioners.

In the next sections we discuss time assumptions, categorize time perspectives employed by

<sup>1</sup> Tuma and Hannan (1984: 82-88) distinguish between discrete and continuous time models based primarily on available data, analytical methods, and so on, instead of the underlying assumption about time. As time is broken into smaller and smaller temporal subunits, it approaches the continuous time models to which they refer. Their use of "continuous time" differs from the definition we use in this article, which does not allow for comparison of temporal distances.

strategy researchers, and consider implications for strategy researchers and practitioners.

### ELEMENTS OF TIME PERCEPTIONS

Empirical work shows general agreement on the ubiquity of temporal perceptions. Linguistic evidence indicates that all natural languages have adverbs that refer to time, as well as aspects and modalities of verbs that incorporate temporal information (Gell, 1992: Chapter 14). Evans-Pritchard (1939, 1965) argues that time is inherent to a person's self-definition in a social structure. In his study of temporal systems in Bali, Geertz (1973) asserts that time is a basic social construction serving to reinforce social structure and relationships. There is also evidence that cross-cultural differences in time perceptions are reflected in behavior, such as day-to-day rhythms and temporal pacing (Levine, West, & Reis, 1980). Levine and Bartlett (1984) demonstrate that the average speed of walking and postal transactions and the accuracy of bank clocks differ across countries.

McGrath and Kelly (1986) revisit fundamental and unresolvable questions about time raised in Heath's (1956) classic book, including questions about the reality of time (time as absolute versus relational and abstract versus concrete), whether time can be measured independently of space and motion, time structure (time as a continuous "fabric" versus divisible), and the directionality of time (time flows linearly versus in repetitive cycles). These questions describe four general time dimensions, to which we have added a fifth dimension—a temporal referent point—in Table 1.<sup>2</sup>

To explore potential diversity in individual time perceptions, we briefly review literature from several different fields, including anthropology, management, psychology, and sociology, to discuss alternative views of time.

<sup>2</sup> Our list of five time dimensions is not intended to be exhaustive. Other authors have proposed distinct time dimensions or combinations of dimensions. For example, Graham (1981) has proposed three approaches to time across cultures: procedural-traditional (emphasis on procedures and not time itself), circular-traditional (emphasis on time as holistic and epochal), and linear-separable (emphasis on time as a sequence of events with one following another). See also footnote 4.

The first dimension describes the nature of time and whether time exists as a real phenomenon or is epiphenomenal. A real view of time suggests that it is a fundamental "category" and exists independently of events, objects, space, and motion. An epiphenomenal view emphasizes time as existing only in relation to events, objects, space, and motion. Some social science models involve causal variables that are either functions of time or closely related to time, such as age or experience, and timing variables often serve as proxies for other variables that are difficult to measure directly (Tuma & Hannan, 1984: 231).

The second dimension focuses on whether time is experienced objectively or subjectively. An objective view suggests that time is based on some external (to individual perception) metric, such as the decay of cesium atoms, which formed the basis for an atomic clock, or "internet time." A subjective view suggests that time gains significance only through human interpretation. Durkheim's influential argument of the subjective nature of time emphasizes its social context:

... all duration is spread out before the mind, and upon which all possible events can be located in relation to fixed and determined guidelines ... are taken from social life. ... what the category of time expresses is the time common to the group, a social time, so to speak (1965: 10-11).

Sorokin (1943) suggests that subjective time perceptions determine the meaning attributed to specific events within a sociological system, which, in turn, affects individual and collective behaviors. In research on mechanical time keeping and social forces, objective and subjective views of time are combined (Dohrn-van Rossum, 1996; LeGoff, 1980).<sup>3</sup> Lauer (1981) acknowledges clock time passage based on external standards and social time based on histories, feelings, and beliefs. Anthropologist Evans-Pritchard (1939) explores ties between social roles and objective environmental rhythms, such as growing cycles.

The third dimension is whether time flow is perceived to advance with novelty and little repetition of events (novel time flow), cyclically with repetitive events (cyclical time flow), or

<sup>3</sup> Philosophical support for the idea that objective and subjective views are not mutually exclusive can be found in Collingwood (1993: 292-302) and Vatsyayan (1981).

**TABLE 1**  
**Research Classifying Time<sup>a</sup>**

Researcher and Study	Nature of Time (Real versus Epiphenomenal)	Experience of Time (Objective versus Subjective)	Flow of Time (Novel versus Cyclical versus Punctuated)	Structure of Time (Discrete versus Continuous versus Epochal)	Referent Anchor (Past versus Present versus Future)
Evans-Pritchard (1939)	Real	Links objective to flow issues of cycles through seasonal activities	Cyclical: natural cycles such as growing seasons are emphasized	Epochal	
Sorokin (1943)	Real	Subjective influences social meaning		Discrete	
Hall (1959)	Real	Subjective		Discrete: m-time or sequenced actions Continuous: p-time, with simultaneous actions	
Gurvitch (1961)	Epiphenomenal	Subjective views shaped by key events		Epochal: flow of irregularities marks time periods	
Kluckhohn & Strodtbeck (1961): time orientation, being versus being-in- becoming versus doing linedity	Real	Subjective	Novel and continuous	Discrete: doing focus Continuous: being-in- becoming, being	Past: being Present: doing Future: doing, being-in- becoming
Mumford (1963)	Real	Links objective to subjective views through development of clocks		Discrete	
Durkheim (1965)	Real	Subjective shapes collective action	Cycles determine social structure	Discrete with defined units of time	Past heavily shapes present and future
Husserl (1966)	Real	Subjective: internal consciousness determines time		Continuous	
Gale (1968)	Real			Discrete: A-series Continuous: B-series	All three anchors

Graham (1981)	Epiphenomenal: procedural time (time acts to separate procedures only) Real	Objective and subjective	Novel: linear-separable Cyclical: circular- traditional	Past: circular-traditional Present and future: linear-separable
Lauer (1981)	Real	Distinguishes objective (clock time) from subjective (social time) Objective	Novel	
Tuma & Hannan (1984)	Epiphenomenal from a methodological perspective	Objective		
McGrath & Kelly (1986)	Real: Newtonian, Einsteinian, transactional Epiphenomenal: Eastern	Objective: Newtonian Subjective: Einsteinian, transactional	Novel: Newtonian Cyclical: Eastern, transactional Punctuated: Einsteinian	Past: Eastern, transactional, Einsteinian Present: Einsteinian, Newtonian, transactional Future: Einsteinian, Newtonian
Gersick (1988)	Real	Subjective	Punctuated: work teams pace themselves according to punctuated events Novel and epochal	Confucian dynamism: present versus future oriented All three anchors
Hofstede (1991)	Real	Subjective	Novel and epochal	
Gell (1992)	Real and epiphenomenal	Objective and subjective	Novel and cyclical, such as rebirth and life cycles Novel	All three anchors using Cottle's (1976) Circles Measure Test
Trompenaars (1997)	Real	Subjective	Novel	

<sup>a</sup> Cells are left empty if this aspect of the researchers' description is unclear or a given dimension of time is not addressed.

irregularly with repetitive events punctuated by novel ones (punctuated time flow). A person having a novel time perspective views each day as relatively new, with a capacity to reinvent itself and events only loosely influenced by the past. One having a cyclic perspective sees time proceeding according to cycles and repetitive events, such as the reoccurrence of product and market cycles. Gell (1992: 34–35) proposes that a critical distinction between novel and cyclical time flows revolves around whether events are recurrent—not whether time progresses in a forward direction. Hannan and Freeman (1977, 1989) propose a similar distinction between fine- and coarse-grained environments, where the former refers to short cycles between uncertain events and the latter refers to long cycles between uncertain events. The punctuated time perspective characterizes the relationship between the past and the future as loosely coupled. Shackle (1972: 76) describes an orderly society suddenly cascading into a series of new patterns, similar to what Schumpeter (1942) describes as creative destruction.

Our fourth temporal dimension is whether the structure of time is perceived to consist of discrete temporal units of measurable and equal duration (discrete); a continuous flow that cannot be broken into units but can only be identified with events (continuous); or discrete temporal units, the length of which is perceived to vary depending on subjective experience (epochal). Gale (1967, 1968), drawing from McTaggart's (1921, 1927) work and discussed by Gell (1992), distinguishes "A-series" from "B-series" time. The former, a form of discrete time, refers to time as events differentiated by whether they are in the past, present, or future and located as moments in time by some form of dates; the latter, a form of continuous time, refers to time as a before/after series of events. A continuous view allows for events to be ordered as a series or sequence, but the relative distance among events is not meaningful. A person views time as moving from one event to another without any significance to the absolute or relative spacing among events so that ancient practices may be as relevant to an Indonesian manager as last week's business seminar. Hall (1959, 1983) touches upon the distinction between discrete and continuous time with his monochronic (m-time) and polychronic (p-time) time concepts. Individuals holding an epochal time structure

view do not interpret or experience time as flowing uniformly across events or periods. Thus, a month spent on holiday in the Maldives passes more quickly than a month awaiting a health prognosis. Gurvitch (1961) highlights epochal time flow with a subjectively determined view producing different types of time distortions where time flows "irregularly"—that is, not in consistent units.

The final dimension is whether time perceptions are anchored with a referent point in the past, present, or future. Kluckhohn and Strodtbeck's (1961) cultural value "time orientation" refers to the time frame most salient: past, present, or future.<sup>4</sup> For example, the strategic planning of many Japanese companies reflects a combination of a past and future orientation, with strategic plans reflecting a company's history carried forward by planners for as much as a century. Confucian dynamism (Chinese Culture Connection, 1987; Hofstede & Bond, 1988), which is a fifth cultural dimension added to Hofstede's original four-part cultural classification scheme (Hofstede & Bond, 1988), reflects a short-term versus long-term orientation, along with other characteristics.

We now apply the framework of five time dimensions to review dynamic strategy research.

### TIME IN STRATEGY RESEARCH

Strategy researchers incorporate a wide range of applicable theories with temporal influences potentially spanning all levels of anal-

<sup>4</sup> Kluckhohn and Strodtbeck (1961) propose two additional cultural values that relate to an individual's temporal referent points. One cultural value distinguishes among "being," "being-in-becoming," and "doing" orientations. A being society highlights immediate gratification and spontaneous action, without a focus on future accomplishments (present orientation). In a being-in-becoming society people focus on action and measurable, long-term achievements (future orientation). A doing orientation emphasizes self-expression and short- and long-term goal accomplishment (present and future orientation). Kluckhohn and Strodtbeck (1961) also highlight relational cultural values. This is similar to Parsons and Shils' (1951) self-orientation versus collectivity orientation and individualism versus collectivism (Earley & Gibson, 1998; Erez & Earley, 1993; Hofstede, 1980, 1991; Triandis, 1994, 1995; Triandis, Bontempo, Villareal, Asai, & Lucca, 1988; Wagner & Moch, 1986). In their conceptualization, however, Kluckhohn and Strodtbeck (1961) incorporate a past referent point by emphasizing "lineal" relationships and a collective sense maintained over time and generations.

ysis. Temporal proximity of stimulus and response (Dragoi & Staddon, 1999) is critical when operant conditioning is used to facilitate the organizational change. Macroeconomic rhythms have been shown to influence firm strategies (Amit & Livnat, 1988; Lubatkin & Chatterjee, 1991). Because it would be impossible to review all strategy research that incorporates temporal elements, we paint a broad picture of the strategy field by emphasizing major research streams. In this way our review is selective. We analyze researchers' perspectives on how time implicitly influences their conceptualizations, methods, and/or explanations. We derive our approach from anthropologist Levi-Strauss's (1963) categorization of research concerning "hot" and "cold" societies (those having their own history and those having static and immutable cognitive schemes).<sup>5</sup> We associate research streams with the temporal assumptions described above.

#### Nature of Time: Real or Epiphenomenal

Time is seldom an important direct causal variable in theories of firm strategy; instead, in many empirical research designs, scholars rely upon time as a methodological proxy for other phenomena of theoretical import. The experience or learning curve literature (Lieberman, 1989) is consistent with an epiphenomenal view of time, because in it we find an association of time or production levels over time with the extent to which individuals repeat a wide range of activities and learn (Arrow, 1962). Similarly, the top management team literature focuses on the organizational tenure (Michel & Hambrick, 1992) or team tenure (Finkelstein & Hambrick, 1990) of the top management team, because tenure may relate to group cohesion, industry or firm knowledge, and compatible work patterns.

We find a few instances of time taking center stage as a variable of direct theoretical and empirical importance in other research streams. In models of time-based competition (Stalk & Hout, 1991), speed in strategic decision making

(Eisenhardt, 1989, 1990), and the timing of competitive responses (Ferrier, Smith, & Grimm, 1999; Smith, Grimm, & Gannon, 1992), time is portrayed as a real phenomenon because it is emphasized as an important strategic outcome variable that has real and direct consequences for firm performance. Dierickx and Cool's (1989) discussion of time compression diseconomies suggests that time itself—not time as a proxy for other factors—may be an important input into asset creation processes.

#### Experience of Time: Objective or Subjective

Empirical strategy researchers rely almost exclusively on objective time measures based on past events or historical dates. In longitudinal studies of population dynamics, researchers incorporate clocks tied to precipitating external events or intraorganizational transitions. These clock-setting events are defined objectively, based on the date industry sales began (Barnett, 1997; Mitchell, 1989), regulatory changes occurred (Carroll & Swaminathan, 1991), or top managers were replaced (Amburgey, Kelly, & Barnett, 1993; Carroll, 1984).

The subjective view of time is not clearly represented in strategy research. We find increasing interest in subjective views operationalized as either shared views of strategy (Peteraf & Shanley, 1997; Reger & Huff, 1993) or idiosyncratic perspectives that might alert individuals to entrepreneurial opportunities (Kirzner, 1973, 1979; Mosakowski, 1998a). In few if any strategy studies is there a focus on the subjective perceptions of time, pacing, rhythms, or dynamics. In the organizations literature notable examples include Gersick's (1988) study of how group members' perceptions of time and deadlines trigger group progress and Zaheer, Albert, and Zaheer's (1999) call to incorporate subjective views of time scales.

Perhaps the strategy research closest to a subjective view of time is work identifying how multiple views of time influence strategic actions. Mitchell's (1991) study of dual clocks suggests that entrants and incumbents are affected by different clocks: a clock associated with all entrants' actions versus a clock associated only with incumbents' actions. Although Mitchell (1991) constructs his dual clocks with objective measures similar to those described above, acknowledgement of dual clocks allows that, to

<sup>5</sup> To some extent, this categorization scheme reflects our own views and interpretations, because researchers' views of time are not explicit in most of the studies examined. We rely upon researchers' own descriptions of time when available, and we emphasize studies that are clear concerning their position on the five time dimensions.

some extent, time is in the eye of the beholder. Eisenhardt and Brown (1998) emphasize diversity in the rhythms experienced by firms. Without clearly deciding whether interfirm differences in rhythms are attributable primarily to differences in internal social rhythms or external environmental rhythms, they allow for different perceptions of rhythms.

#### **Time Flow: Novel, Cyclical, or Punctuated**

Strategy researchers who assume a novel flow hold little expectation that past events will repeat in the future, implying a relatively unpredictable future since each day presents new possibilities. A future distinct from the past is incorporated to varying degrees in research on real options theory (Bowman & Hurry, 1992; Kogut, 1991; McGrath, 1997, 1999), experimentation (Lippman & Rumelt, 1982; Mosakowski, 1997), and scenario techniques (Schoemaker, 1993; Schwartz, 1996).

To some extent, this emphasis on novel time views has been in response to traditional strategic management research, in which cyclical time flow or constancy of causal models is assumed. Life-cycle or stage models of firm evolution (Drazin & Kazanjian, 1990; Greiner, 1998; Miller & Friesen, 1984) have been widely discussed and applied to such issues as technological evolution and innovation (Anderson & Tushman, 1990; Markides, 1999), cycles within joint ventures (Doz, 1996), and entry mode (Carroll, Bigelow, Seidel, & Tsai, 1996). In these models researchers do not necessarily assume that each firm revisits a stage experienced earlier. Instead, patterns described in life-cycle or stage models may repeat themselves across firms and industries such that a stage that one firm experienced in the past may reappear for another firm in the future. Other strategy research streams indicate that focal actors will revisit the same or similar events over time. In the strategic planning literature (Chakravarthy, 1987; Steiner, 1969), for example, researchers prescribe that firms create planning cycles that repeat themselves within and across different levels within the firm.

Technological change researchers (Romanelli & Tushman, 1986; Sastry, 1997; Tushman & Anderson, 1986) often have embraced a punctuated view of time flow. Technological changes may create discontinuous shocks, which afford

differential advantages depending on firm competencies in place.

#### **Time Structure: Discrete Time, Continuous Time, or Epochal Time**

Consistent with discrete time assumptions, in empirical research on firm and industry dynamics, scholars often assume time consists of equal and comparable units. For example, industry entry models are concerned with the number of entries into an industry per year (Barnett, 1997; Carroll & Hannan, 1989). In this approach researchers assign events to dates and equate the time interval between the years 1899 and 1900 with that between 1999 and 2000. In firm failure models researchers incorporate time dependence by allowing that the likelihood of failure depends upon the number of time units away from historical dates or past events (Barnett & Carroll, 1987; Baum & Mezias, 1992).

There are numerous examples of strategy research embracing continuous time where event order supersedes temporal distance between events. The most obvious examples can be found in research on the impact of entry order or innovation order on firm success (Klevorick, Levin, Nelson, & Winter, 1995; Lambkin, 1988). This work relates to the literature on first-mover advantages that dichotomizes or trichotomizes a firm's position within an entry sequence (Lieberman & Montgomery, 1988).

Researchers who assume epochal time flow portray individuals as perceiving unequal discrete time units, with some moments lasting longer than others. The general ignoring of a subjective time view naturally hinders the incorporation of epochal times. Yet, we do find strategy models in which some moments are more important than others. Research on path dependencies stresses the importance of some past moments over others for influencing today's choices (Arthur, 1988, 1989; David, 1985; de Gregori, 1987). A similar texture to time also appears in Dierickx and Cool's (1989) time compression diseconomies.

#### **Temporal Referent Point: Past, Present, or Future**

We find in the strategy literature's discussion of short- versus long-run focus (Lavery, 1996) and the tension between static and dynamic

efficiency (Ghemawat & Ricart I Costa, 1993) an acknowledgment of strategic decision makers' temporal referent points. In addition, these arguments illustrate that a future-oriented perspective appears in virtually all strategy research, given a shared interest in the usefulness of strategy ideas for managerial behaviors in the future.

Researchers within the resource-based view of strategy combine emphases on the past and future, with less attention to the present. The past orientation of the resource-based view is reflected in what Winter (1987) calls the "full imputation principle." This refers to a backward logic that allocates a firm's returns to resources possessed in the past by assuming that properly valued assets generate normal returns. This past orientation of the resource-based view is also reflected in path-dependency arguments (Barney, 1991; Mahoney & Pandian, 1992).

A future orientation appears in two critical discussions within the resource-based view: the sustainability of economic rents and the creation of dynamic capabilities. Sustainability concerns have dominated the resource-based view of strategy (Barney, 1986a; Mahoney & Pandian, 1992) and other strategy perspectives, such as the Porterian emphasis on entry barriers and mobility barriers (Caves & Ghemawat, 1992; Caves & Porter, 1977; Hatten & Hatten, 1987). To address sustainability, researchers within the resource-based view of strategy propose that isolating mechanisms inhibit rent stream erosion in the future (Mahoney, 1992; Rumelt, 1984, 1987). We also find a similar future orientation reflected in the growing interest in dynamic capabilities (Grant, 1996; Teece, Pisano, & Shuen, 1997) and resource or competency development (Dierickx & Cool, 1989; Hamel & Prahalad, 1993; Tripsas, 1997).<sup>6</sup>

Whether the resource-based view of strategy can incorporate a present orientation has been debated. Barney suggests that it cannot, arguing that "normative implications of culture research are limited to assisting firms that already possess valuable, rare, and imperfectly imitable culture" (1986b: 663; emphasis added). Mosakowski (1998b) disagrees, arguing that the

resource-based view allows that widely held managerial prescriptions adopted today might lead to above-normal profits for some firms in the future.

Other strategy researchers are more sanguine about a present-future link. The traditional SWOT analyzes a firm's strengths and weaknesses today given its future opportunities and threats. Mission statements and organizational visions (Baum, Locke, & Kirkpatrick, 1998; Larwood, Falbe, Kriger, & Miesing, 1995) help develop a coherent focus today to help the firm compete in the future (Hamel & Prahalad, 1994). Strategic decision making in high-velocity environments (Bourgeois & Eisenhardt, 1988; Eisenhardt & Brown, 1998) depends less on the past and more on consideration of current factors important in the near term. Similar arguments appear in work on hypercompetitive environments (D'Aveni, 1994; Illinitch, Lewin, & D'Aveni, 1998) and competitor reactions (Ferrier et al., 1999; Smith et al., 1992).

In the next section we conclude our analysis of strategy research with regard to temporal assumptions. We discuss the implications of our findings for strategy research. This is followed by a discussion of how the consideration of time views might inform the strategic choices and behaviors of managers.

### IMPLICATIONS OF TIME ASSUMPTIONS FOR STRATEGY RESEARCH

In our review of research on temporal perceptions, we highlighted five dimensions that describe how individuals might think about time and how researchers approach their study of strategic choice. This produced several findings, including (1) strategy research is relatively diverse as to how researchers incorporate time, with the exception of a subjective view of time; (2) strategy researchers do not study dynamics by explicitly acknowledging or building upon time perspectives; and (3) strategy models fail to incorporate the temporal assumptions of individual or firm-level actors. We consider each of these in turn.

#### Diverse Time Perceptions in Strategy Research

With one important exception, strategy researchers very successfully cover the breadth of diverse time perspectives described in our review of the time literature. This is contrary to the

<sup>6</sup> The dynamic capabilities literature can be contrasted with the considerable literature on the dominance of inertial forces within the firm (Burgelman, 1994; Hannan, 1997; Hannan & Freeman, 1984; Kelly & Amburgey, 1991; Rumelt, 1995; Stinchcombe, 1965).



assertion that Western management thought represents a very narrow view of time (Bluedorn & Denhardt, 1988). It was not difficult to uncover U.S.-based strategy research in which cyclical views of time or past referent points are assumed, although these temporal views have been ascribed to Asian cultures. The lack of explicit attention to temporal assumptions has, to some extent, masked the diversity of views represented in strategic management research.

The one exception is that a subjective view of time generally has been ignored. Incorporating a subjective view would require that strategy researchers examine individual and/or social processes that affect temporal perceptions. Although individual processes that determine temporal perceptions are not unimportant, we find the latter more promising for research on firms engaged in competitive and cooperative interactions with other firms. As managers implement lean manufacturing techniques or pursue electronic commerce, they are implicitly altering, as a group, what is considered to be fast or slow in their industry. For example, e-tail (or internet retailing) might be perceived as faster than telephone ordering, even though objective speeds are similar. A subjective view allows the strategy researcher to model time perceptions as endogenously determined and, in part, a variable subject to strategic influence. In fact, stakeholders' perceptions of a firm's temporal patterns might serve as a valuable resource in a way that is similar to perceptions of corporate reputation for quality products and services. Perceptions might be key to understanding firm timing as a source of competitive advantage. Firms perceived to be faster in fast-paced industries or more tied to the past in traditional industries are likely to outperform their competitors.

Also, a subjective view of time sheds light on social processes within the firm that influence time-related strategic behaviors and decisions. Gersick (1988) has studied these processes within groups, and strategy researchers can extend her work to understand how firm-level and industry-level processes influence time perceptions and vice versa. Firms might interpret doubling an investment to half a product's time-to-market as trivial when competition is stiff, but large when competition is lax. Understanding how to alter these perceptions will allow managers to design organizations that succeed with

time-based competition or to resist industry folklore that faster is always better.

Incorporating a subjective view of time into strategy research could be accomplished using a broad array of techniques established in related fields. Although in-depth qualitative methods might facilitate our understanding of individual interpretations of time, there is a long tradition of perceptual research that relies upon large-sample data and statistical analysis. Huff (1997) argues that the adoption of a cognitive or perceptual approach to strategic problems is distinct from the research methods employed. In a study of perceived pacing in organizations, for example, Sutton and Rafaeli (1988) studied 11,805 customer-clerk interactions in 576 convenience stores. Strategy researchers can take a similar approach to measuring time perceptions directly in order to ascertain their importance for strategic decisions.

### Implicitness of Temporal Assumptions

Although we found ample representation of many time perspectives in strategy research, we found little evidence that this reflected systematic and conscious decisions. Few researchers made explicit *why* time was incorporated in a given fashion. Dynamic models of strategy appear disconnected from researchers' explicit assumptions about time. For quality dynamic research, scholars must take care to relate temporal assumptions, theoretical models, and empirical research methods.

Research on strategic alliances and the development of trust allows us to illustrate how the relation between alliance duration and alliance success differs depending on the time view adopted. Researchers adopting the first of two theoretical perspectives assume that the longer firms engage in an alliance, the more trust accrues. Rousseau, Sitkin, Burt, and Camerer (1998) argue that relational trust emerges after repeated interactions by alliance partners over time. This perspective indicates that the overall time spent in an alliance has a positive effect on alliance success (see also Gulati, 1995; Ring & Van de Ven, 1992; and Zaheer & Venkatraman, 1995). Researchers adopting the second theoretical perspective assume that strategic alliances are inherently dynamic (Inkpen & Beamish, 1997; Kogut, 1991) and move through predictable stages (Doz, 1996; Kogut, 1988; Ring & Van de

Ven, 1994). In this view, if an alliance persists without a transition to the next developmental stage, time will have a negative effect on success.

Explicating the temporal assumptions in the strategic alliance literature will clarify theoretical agreements, disagreements, and their bases. The distinct perspectives on strategic alliances noted above share the following time assumptions: time is epiphenomenal and represents that state of the relationship, time is experienced objectively and structured with discrete and equal units, and the strategist looks to past referent points to emphasize the alliance history. The second theoretical approach, however, emphasizes cyclical time flow, where the researcher expects to observe past alliance patterns, such as transitions to new stages, repeat themselves. When transitions are not observed, the duration of the alliance is interpreted as indicating the relationship has stalled. The first theoretical perspective, however, involves no assumptions about the form successful alliances may take over time and allows for alliance development to occur with novel time flow. Here the duration of the alliance is interpreted as an indicator of relational trust.

Highlighting similarities among temporal assumptions helps us identify other types of research in which scholars have adopted an objective time assumption, for example, and suggest ways to conceptualize objective time in strategic alliance research. How do other researchers decide between using historical time starting with some calendar date versus counting number of days, months, or years to measure duration since some event? If a duration-based clock is used, should duration be calculated based on events or decisions internal to the alliance or the partner firms, or should it be based on events external to the alliance and partner firms? Should it begin when the partner firms are founded, when they decide to form the alliance, when the alliance contract is written, or when the alliance first starts production or sales? Other research, such as that on population dynamics, could shed light on different ways to incorporate objective time assumptions.

Identifying commonalities among temporal assumptions employed by strategic alliance researchers helps point to novel research ideas associated with previously unexplored temporal assumptions, such as a subjective time view.

Research allowing for a subjective view of time could highlight how organizational processes and patterns and individual actors influence time experienced in strategic alliances. Those with the first perspective could focus on social determinants of the perceptions of the overall longevity of the alliance and how this relates to perceptions of alliance strength, whereas those with the second could emphasize perceptions of the alliance's progress by studying social processes associated with key transition points.

Attention to differences in time assumptions also informs the basis of debate within the alliance literature. Differences in the time assumptions underlying these two perspectives point researchers to different theoretical questions (e.g., what prolongs alliance relationships versus what factors help firms progress through alliance stages) and methodological approaches (e.g., measuring time since alliance formation versus categorizing stages and measuring time since previous stage transitions). Also, acknowledgment that the first theoretical perspective does not include an assumption of set patterns of alliance progression might alert the researcher to allow for wide diversity in alliance characteristics over time and to incorporate this diversity into the definition of an alliance and the operationalization of what constitutes an alliance. A broad definition and flexible operationalization scheme might be less important for a stage view of alliances, which circumscribes alliance characteristics over time.

We use the example of the strategic alliance literature to highlight the importance of explicating temporal assumptions to identify unexplored research topics and facilitate discussion within the extant literature. Theoretical and methodological progress in all dynamic strategy research can be served by clarifying temporal assumptions and their impact on methods and models. This possibility speaks to fundamental concerns, such as how strategy is defined. In proposing distinct and sometimes complementary definitions of strategy, Mintzberg (1987) considers strategy as a firm's past pattern of organizational actions, as a firm's current position, and as a plan for the future. These definitions correspond to the past, present, and future temporal referent points and may be more or less appropriate, depending on temporal assumptions about how the future unfolds. For ex-

ample, the assumption of a future that unfolds with stability punctuated by novelty might be suited to the definition of strategy as a plan for the future. Ties to research methods must also be considered. Much interview data emphasize perceptions of a firm's current strategic and organizational choices or retrospective accounts of past events or choices, and many archival sources represent present accounts of events. Few studies have data on expectations of the future (see Bromiley, 1991, for an exception), even though the definition of strategy as a plan for the future is widely accepted. If a research project assumes punctuated time flow, a future orientation, and strategy as a plan, data collected should reflect beliefs or expectations.

### Temporal Assumptions of Actors Missing from Models

In research linking firm strategy to performance, scholars generally omit individual decision makers and anthropomorphize the firm as the actor; research explicating how the temporal views of actors influence firm strategy is rare (for exceptions, see Das, 1987, and Mosakowski, 1999). Work on the temporal perspectives of individuals involved in firm strategy seldom goes beyond a consideration of whether the individual is short- or far-sighted. This, in part, derives from ignoring subjective time perceptions. If everyone experiences the same objective time, there is no idea to allow for different perceptions among actors. Perhaps a more important reason why strategy researchers fail to explicate temporal assumptions of actors involves the lack of explicit linkages across levels of analysis (Klein, Dansereau, & Hall, 1994; Rousseau, 1985). Staw and Sutton state:

It is important to conduct research on the effects of aggregated beliefs (and emotions and behaviors) on organizational actions rather than to just assume that such effects will occur because they have been demonstrated in individuals or groups operating outside of the organizational context (1992: 26).

They suggest a number of influences from the micro to the macro levels in an organizational context, such as powerful individuals who shape strategic thinking and decision making.

In research that crosses levels of analysis, such as individuals/institutions or different time scales within organizations, scholars may incor-

porate reciprocal interactions. Scott's (1994) revised institutional model presents individuals as having reciprocal influences on the organizations in which they operate through rituals developed, norms guiding others' actions, and so on. These rituals and norms, in turn, shape organizational practices and the organization structure. Similarly, Giddens' (1989) concept of colonizing the future illustrates how the actions of individuals within groups can guide more macrolevel organizational outcomes based on individuals' social constructions. Drawing a parallel to levels of analysis, Zaheer et al. (1999) propose time scales (or intervals of time of different lengths) as depicting distinct views of organizational activities. They raise the possibility of nested time scales, where phenomena occurring within one time scale may influence phenomena occurring within another time scale.

A linkage of individual perceptions to firm-level choices requires a refined view of how individuals conduct themselves within a social context, since single individuals rarely make strategic choices. Individuals operate within defined and emergent groups in their organizations, and these groups are responsible for strategic initiatives. Individuals operate within boundaries defined by their social collectives to maintain their status within a group (Earley, 1997; Stryker, 1980; Tajfel & Turner, 1986). These very concepts of time may be held for social purposes, such as maintaining or enhancing one's "face" or status. A manager with a punctuated view of time may focus on long-term planning around hypothesized past critical events in an effort to predict and plan for the punctuated change. More important, this manager will create institutional practices, select key personnel, and implement decisions that further reinforce a "wait for the event" approach. At an extreme, omens or symbolic outcomes are awaited in a quasi-superstitious fashion. As these omens are revealed, the manager's status is reinforced, and she takes on a prophet status. Strategy making might become associated with rituals surrounding omens or punctuated events. Thus, it is insufficient to view a person's concept of time as passively acquired from one's culture or social setting. Individuals will adopt and adapt to views of time that are personally reinforcing and, in turn, create social institutions to perpetuate such views.

Given these implications for strategy research, we now turn to how acknowledgment of different time views may inform managerial choices.

### MANAGERIAL IMPLICATIONS OF TIME AND STRATEGIC CHOICE

While we have emphasized how the study of alternative time views could enrich strategic management research, we also take the position that consideration of temporal perceptions is quite useful to managers. We describe four ways in which this might occur: (1) matching time views to firm choices; (2) matching time views to industry conditions; (3) anticipating competitors' strategic choices, based on their different time views; and (4) using knowledge of current time views to change them.

#### Matching Time Views to Firm Choices

One advantage of managerial time awareness is the ability to develop more effective links between temporal assumptions and strategic and/or organizational choices. Internal processes and practices can be designed to suit the time view held by a firm's managers. If managers are anchored to the past, strategic planning processes can be designed to emphasize present and future considerations in a compensatory fashion. One might also consider a match between temporal perceptions and firm strategy. The novel time flow perspective of managers within a firm might be suited to a strategy based on continual reengineering. Another example is a second-mover firm in an industry where the assumption of continuous time may highlight the likely success of the first-mover firm. The campaign of "being number two and trying harder" could be adapted with regard to entry order: our firm is a second mover, so we'll always try harder with customer service and competitive prices to succeed.

#### Matching Time Views to Industry Conditions

Time views that permeate an industry are not always those best suited to industry conditions. When an industry with a history of blockbuster patents shifts to an emphasis on incremental innovations, industry recipes (Spender, 1989) may persist with false assumptions of a contin-

uous time structure and an inappropriate emphasis on first movership. Awareness of temporal assumptions may highlight inefficiencies associated with resource allocation strategies, shifting the firm to adopt a new causal model. Another example relates to a subjective time view held by competitors in an industry. Unaware of their time views, firms may unwittingly slow down critical activities, such as new product introductions, during recessionary times and speed up these activities during expansionary times.<sup>7</sup> A firm aware of its subjective experience of time may choose to not follow the typical industry slow-down pattern, thereby greatly enhancing its reputation for introducing novel products, even though its behavior would be seen as constant by someone viewing time objectively.

#### Anticipating Competitors' Strategic Choices

Managers aware of different temporal perceptions and the effect of these perceptions on other managers' choices and behaviors are less likely to be blindsided by what might appear to the uninformed as erratic or unexplainable behavior. An unaware American manager working in Thailand would not anticipate local firms' intentions to make major investments and take significant financial risks in 1999 because of the punctuated period associated with the king's seventy-second birthday (a prodigious combination of six cycles of 12 years). An American manager aware of Thai time views could preempt certain investment opportunities in 1998. She could also sell off Thai assets in 1999 in the face of increased demand for plant and equipment and anticipated heightened competition post 1999. The American's understanding of Thai periodicity will also facilitate deciding when to reinvest into this market. Whether Thai investments made in 1999 will generally carry over into the next 5 or 20 years will have implications for the American investment strategy in Thailand.

<sup>7</sup> We thank a reviewer for this example of how epochal time is reflected in individuals' perceptions.

## Using Knowledge of Time Views to Change Them

Awareness of time views is necessary when a firm's strategy attempts to change temporal assumptions manifest in an industry's recipes (Spender, 1989). With Japanese automobile manufacturers' advantages at rapid design and manufacturing cycle times (Adler, Goldoftas, & Levine, 1999), European and American producers can choose between playing catch-up or changing customer preferences for design innovations. Current customers' preferences suggest that buying a new car is similar to buying a new computer, where purchases are made in punctuated time and future models, styles, features, prices, and so on may undergo sea changes. European automobile manufacturers might attempt to change customers' temporal perceptions away from this punctuated time view toward a cyclical time view by emphasizing product stability and getting it right the first time.

We conclude by emphasizing a global or etic view of time. Strategy researchers and managers alike will benefit from incorporating the diversity of time dimensions into their strategic thought. The relevance of a multifaceted view of time will only be enhanced as strategy research and business practice continue to spill across national and cultural boundaries. Researchers and managers alike must confront their implicit temporal assumptions and view their expanding world through different temporal lenses.

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