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SUGGESTIONS FOR STUDYING STRATEGY PROCESS: A RESEARCH NOTE

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This paper makes three suggestions to researchers for studying strategy process. First, define the meaning of process. Process is often used in three ways in the literature: (1) a logic used to explain a causal relationship in a variance theory, (2) a category of concepts that refer to actions of individuals or organizations, and (3) a sequence of events that describe how things change over time. The second suggestion is to clarify the theory of process. An interdisciplinary literature review identifies four types of theories of process that can be drawn upon: life cycle, teleology, dialectics, and evolution. The third suggestion is to design research to observe strategy process in such a way that is consistent with one's definition and theory of process.

There is growing scholarly interest in strategy process research, which is concerned with understanding how organizational strategies are formulated and implemented and the processes of strategic change (Chakravarthy and Doz, this issue). As this special issue of *SMJ* indicates, the body of strategy process research is diverse and cannot be contained within a single paradigm. Implicitly, scholars tend to adopt very different views of strategy process, and the views they adopt influence the questions they ask, the research methods they employ, and the contributions they make. It is useful to make these different views explicit. Doing so can help individual scholars better understand the conceptual basis of their research, can facilitate communications between scholars pursuing different views of strategy, and collectively can help us all better understand promising directions and dead ends in strategy process research. With these objectives in mind, this paper makes three

interrelated suggestions for studying strategy process.

1. Define the meaning of process.
2. Clarify the theory of process.
3. Design research to observe process.

DEFINE THE MEANING OF PROCESS

A cursory review of the numerous 'process models' that have been proposed in strategic management literature indicates that the term 'process' is used in many different ways. My first suggestion for studying strategy process is to reduce confusion in the literature by distinguishing between the different usages of this term. In particular, three meanings of process are often used: (1) a logic that explains a causal relationship between independent and dependent variables, (2) a category of concepts or variables that refers to actions of individuals or organizations, and (3) a sequence of events that describes how things change over time.

Key words: Strategy process, development, change, research methods

Process as explanation for variance theory

In terms of an input-process-output model, the first definition uses a process logic to explain a causal relationship between observed inputs (independent variables) and outcomes (dependent variables) in a variance theory (Mohr, 1982). In this usage, process is not directly observed. Instead, a process story or logic is used to explain why an independent (input) variable exerts a causal influence on a dependent (outcome) variable. For example, to explain why an increase in organization size increases structural differentiation at decreasing rates, Blau and Schoenherr (1971) invoke a process story which describes the sequence of events in which labor is progressively divided as additional personnel are hired with different skills in an organization.

In general, process explanations are commonly used to explain causation between independent and dependent variables. But, as Van de Ven and Huber (1990) discuss, such process explanations typically entail highly restrictive and unrealistic assumptions about the order and sequence in which events unfold in organizations. One significant way to improve the robustness of process explanations in variance theories is to explicitly observe the process argument that is assumed to explain why an independent variable causes a dependent variable. To do so requires opening the proverbial 'black box' between inputs and outcomes, and to directly observe process.

Process as category of concepts

The second and most frequently used meaning of process is as a category of concepts of individual and organizational actions, such as communication frequency, work flows, decision making techniques, as well as strategy formulation, implementation, and corporate venturing. In this usage, process refers to a category of concepts that is distinguished from other categories of concepts, such as organizational environment, structure, and performance. And, like these other categories, process concepts are operationalized as constructs, and measured as fixed entities (variables), the attributes of which can vary along numerical scales from low to high.

For example, Priem (this issue) examines how strategy making processes influence executive

understanding of cause-effect relationships involving the firm and its environment. Strategy making processes, such as scanning, analysis, and planning conceptually imply that a sequence of activities or events goes on to help make decisions about the firm's alignment with its environment. However, activities in scanning, analysis, and planning are not directly examined (as they are in the third definition of process, below). Instead, these process constructs are operationalized as variables which, as Abbott (1988) argues, transform the constructs into attributes of fixed entities that interact, in causal or actual time, to create outcomes, themselves measurable as attributes of the fixed entities. The variable attributes have only one causal meaning (one pattern of effects) in a given study. As a consequence, when process constructs are represented into this entities/attributes model of reality, one can only measure *if*, not *how*, a change occurred in a variable measured at different points in time. To understand how a change occurred requires a story that narrates the sequence of events that unfolds as a strategy changes over time.

Process as developmental event sequence

The third, and least understood, meaning of process is a sequence of events or activities that describes how things change over time, or that represents an underlying pattern of cognitive transitions by an entity in dealing with an issue.¹ Whereas the second definition of process examines changes in variables over time, the third definition of process takes an historical developmental perspective, and focuses on the sequences of incidents, activities, and stages that unfold over the duration of a central subject's existence. Table 1 exemplifies this third meaning of process by outlining a sample of well-known developmental process models pertaining to strategic decision making (Mintzberg, Rais- inghani, and Theoret, 1976; Cohen, March and Olsen, 1972; Quinn, 1980), strategic planning (Gluck, Kaufman, and Walleck, 1980; Lorange,

¹ Some developmental process models, such as Huff's (1990) maps of strategic thought, are concerned with underlying processes of unspoken cognitive choices, emotions or motivations, which are not directly observable. To study them inferences must be drawn by diagnosing patterns in observable activities, events, or behaviors over time of the subject.

Table 1. Sample of developmental process models in strategic management literature

Authors and Summaries	Beginning ←———— Activity phases or stages —————→ End					
Strategic decision models						
Mintzberg <i>et al.</i> (1976) —Field study of 25 strategic, unstructured decision processes	1. Identification phase —Decision recognition routine —Diagnosis routine		2. Developmental phase —Search routine —Design routine		3. Selection phase —Screen routine —Evaluation–Choice routine —Authorization routine	
Cohen, March and Olsen (1972) —Garbage can model of decision making	Decisions are probabilistic intersections of relatively independent streams within organizations of: —choices —————→ —problems —————→ —solutions —————→ —energy of participants —————→					
Quinn (1980) —Case studies of nine major corporations	Fourteen process stages beginning with need sensing and leading to commitment and control systems. Flow is generally in sequence but may not be orderly or discrete. Some of the process stages are the following: 1. Sense need 2. Develop awareness & understanding 3. Develop partial solutions 4. Increase support 5. Build consensus 6. Formal commitment					
Strategic planning models						
Gluck, Kaufman and Walleck (1980) —Study of formal planning systems in 120 companies	1. Basic financial planning —meet budget		2. Forecast-based planning —predict the future		3. Externally-oriented planning —think strategically	
Lorange (1980) —Normative model of corporate strategic planning	1. Objectives setting —identify relevant strategic alternatives		2. Strategic programming —develop programs for achieving chosen objectives		3. Budgeting —establish detailed action program for near-term	
					4. Monitoring —measure progress toward achieving strategies	
					5. Rewards —establish incentives to motivate goal achievement	
Organization development models						
Scott (1971) —Stages of corporate development	1. Single product, channel & entrepreneurial structure		2. Single product, channel & functional structure		3. Multiple products, channels & divisionalized structure	
Greiner (1972) —Stages of organizational growth through evolution and revolution	1. Growth through creativity —Leadership crisis		2. Growth through direction —Autonomy crisis		3. Growth through delegation —Control crisis	
					4. Growth through coordination —Red tape crisis	
					5. Growth through collaboration —Crisis of ?	

1980), and organization development (Scott, 1971; Greiner, 1972).

While these three sets of process models are concerned with the development of very different things, they are strikingly similar in two respects, and different in another. First, with the exception of Cohen *et al.*'s. (1972) garbage can model of choice, all the other process models were developed inductively based on cross-sectional observations or retrospective case histories in a variety of companies. The stages or phases of activities in each model were inferred either from company historical self-reports or by categorizing cohorts of companies into the stages or phases. In no instance was any one company or organizational unit actually observed to go through all the stages or phases of a model over time. Thus, as discussed in the third section, there is a great need for systematic longitudinal research to substantiate and elaborate these process models of development.

Second, in contrast with the variable entities/attributes model used in the second meaning of process, no variables are reflected in the process models in Table 1. Instead, the central focus of developmental process models is on progressions (i.e. the nature, sequence and order) of activities or events that an organizational entity undergoes as it changes over time. As Table 1 exemplifies, the most common form of progression in the strategy literature is a linear sequence of stages or phases of development. For example, a rational process of decision making is typically viewed as a sequence of separable stages (e.g. need recognition, search, screen, and choice activities) ordered in time and with transition routines to make adjustments between stages (March and Simon, 1958). As Poole and Roth (1989) demonstrated, when researchers use *a priori* stages or phases to design their research and collect data, their results can easily become self-fulfilling prophecies. The linear sequential model of development is typically inadequate to deal with the complexities of many strategy ventures because it assumes invariance between and within all organizational units in following a prescribed order of developmental phases; one locked after another.

There are many other forms of progression that are useful for thinking about and observing developmental processes. The child development psychologists, van den Daele (1969; 1974) and Flavell (1972) for example, propose a typology

of developmental progressions that goes beyond simple unitary stages and includes multiple, cumulative, conjunctive, and iterative progressions of convergent, parallel, and divergent streams of activities that may unfold as a strategy develops over time. While many strategic management scholars may not be familiar with this vocabulary, it is useful for appreciating alternative forms of developmental progressions, which in turn, is central to understanding the third meaning of process. Moreover, this vocabulary provides the analytical terms needed to make clear distinctions between the various models of strategy development in Table 1.

Based on mathematical set theory, van den Daele (1969; 1974) and Flavell (1972) introduce the following progressions² that may describe temporal patterns in sequences of events.

Unitary progression

This is a sequence of the form: $U \longrightarrow V \longrightarrow W$, where U, V, and W represent qualitatively different patterns, stages, or phases of activities or behaviors. This model assumes that each stage may consist of any number of subsets of activities, but that these subsets must occur in an ordered progression. If a developmental progression has no more than one subset of events over time, it is called a simple unitary progression, as illustrated in Table 1 by the two strategic planning models and Scott's (1971) stage model of corporate development.

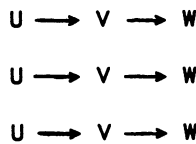
Multiple progressions

This model assumes that developmental processes can follow more than a single possible path. Three common forms of multiple progressions among event sequences are the following parallel, divergent, and convergent progressions.

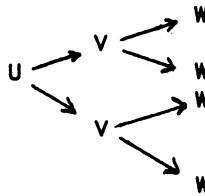
In multiple progressions a temporal sequence of events may reflect more than one pathway at a given time in the ordered progression. For

² Riegel (1969) considered four formal models that parallel van den Daele's. He outlined mathematical formulations for: (1) branching processes, in which elements successively differentiate; (2) root models, based on progressive combination of positions; (3) jigsaw models, which show how patterns emerge from a given set of pieces; and (4) fallout models, which illustrate progressive acquisitions of parts from a predetermined store. Such formal treatments may offer useful distinctions among event progressions in future work.

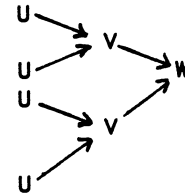
PARALLEL



DIVERGENT



CONVERGENT



example, in the strategic decision process study of Mintzberg *et al.* (1976) in Table 1 more than one feasible path (or routine) of decision diagnosis, search, or evaluation might be pursued in each respective stage of identification, development and selection. These paths diverge from each other at the beginning of each stage, proceed in parallel progressions during each stage, and converge at the end to complete each stage. As this example suggests, any developmental progression that has more than one subset of parallel paths at a time is called a multiple progression. A description of how multiple progressions of events diverge, proceed in parallel, or converge over time provides a useful vocabulary for making process statements about specific stages or the overall developmental pattern of a developing entity over time.

Cumulative progression (in unitary or multiple models)

This model assumes that more than one stage may belong to a unit at a time. In set theory terms: $U \supset a$, $V \supset ab$, $W \supset abc$ (unitary model). For example, a multiple, parallel, partially-cumulative model could look like this.

$$\begin{aligned}
 U \supset a &\rightarrow V \supset ab \rightarrow W \supset abc \\
 U \supset a &\rightarrow V \supset b \rightarrow W \supset bc \\
 U \supset a &\rightarrow V \supset ab \rightarrow W \supset c
 \end{aligned}$$

If events are cumulative, (as they are assumed to be in Scott's (1971) and Lorange's (1980) models in Table 1) then elements found in earlier events or stages are added to and built upon in subsequent events or stages. Complete cumulation means that every event from each stage is carried from its onset until the end of the developmental progression. This of course seldom happens, since losses of memory, mistakes and

detours, and terminated pathways all imply partially cumulative or substitution progressions (as illustrated in the bottom two tracks above). Such partial cumulation is reflected in Quinn's (1980) 'logical incremental' model of a long sequence of 14 stages, and clearly distinguishes it from the rational model of decision making.

A cumulative progression may take the form of addition, substitution, or modification (Flavell, 1972). In *addition*, a later-occurring event supplements an earlier-occurring event. The outcomes of two events E_1 and E_2 may coexist and are both equally available for E_3 . For example, in Scott's (1971) model of corporate development, a multiple products divisionalized structure is largely produced by the addition (with slight modification) of a stage 1 single product entrepreneurial structure with a stage 2 single product functional structure. With *substitution* the outcomes of a later event largely replace those of an earlier one. More precisely, E_2 deletes or subtracts the effects of E_1 , and replaces them by adding those of E_2 . For example, in Greiner's (1972) model of organizational growth, crisis at the end of each stage leads the organization to shift (or substitute) its focus and transition into the next qualitatively new stage. In *modification* a later event represents 'a differentiation, generalization, or more stable version of the earlier one' (Flavell, 1972: 345). In this case the outcome of E_1 is revised or modified in E_2 . For example, in the strategic planning model of Gluck (1980) the planning process and focus of each prior stage is modified and made more elaborate in the next stage.

Conjunctive progressions (in unitary, multiple, or cumulative models)

Conjunctive progressions posit that the elements of subsets may be related, such that aRb , or $aR'b$. Conjunctive events are causally related

events, meaning that events in one pathway may influence events in other pathways of a multiple progression. Of course what is related at one time may be viewed as unrelated at another. Therefore, strict causality among events is difficult to establish.

Conjunctive progressions may be probabilistic, inclusive, or mediated. *Probabilistic* relationships between events occur when the trajectories of multiple paths of activities happen to intersect. Such is the form of conjunction among streams of choices, problems, solutions, and participants' energy in the garbage can model of Cohen *et al.* (1972). *Inclusion* occurs when the outcomes of earlier events become incorporated into the later one, as often observed with PERT charts. In this case E_{11} and E_{12} are logically integrated or converge to yield E_2 . For example, Lorange's strategic programming phase represents the logical inclusion of alternatives from stage 1 into a strategic program in stage 2. In a *mediation* relationship an earlier event or element 'represents some sort of developmental bridge or stepping stone (mediator) to the later one' (Flavell, 1972: 345). So E_2 is required in order to move from E_1 to E_3 , which may also preempt alternative paths. For example, in Greiner's model crisis events mediate and bridge transitions between evolutionary stages of organizational growth.

Recurrent progressions (in unitary, multiple, cumulative, or conjunctive models)

These are repeating strings of events or activities over time. Although the previous progression models have been treated as nonrecurrent sequences, parts or all of them may repeat over time. For example, what distinguishes Mintzberg's model of strategic unstructured decision processes from the others in Table 1 is its attention to repeating routines, or iterative progressions, within each phase of decision making. Abbott (1990) discusses a variety of techniques for the colligation and measurement of recurrent and nonrecurrent event sequence data.

As our examples in Table 1 indicate, these alternative models of progression do not occur independently. Every development process model makes a commitment (implicitly or explicitly) to some form of invariant sequential order, between unit variation (unitary or multiple sequence),

within-unit variance (simple or cumulative structure), in the relationship of developmental elements (conjunctive or disjunctive), and whether event sequences reoccur or not. This vocabulary of temporal relationships among events can help scholars articulate the meanings of their process models in more operational and discriminating ways than has been the case in the past. However, as we will now discuss, this analysis of process as a sequence of events cannot go far without considering the alternative theories of process that may explain specific developmental progressions.

CLARIFY THE THEORY OF PROCESS

Whereas a definition of process indicates one's meaning of process in relation to other uses in the literature, a theory of process consists of statements that explain how and why a process unfolds over time. Such a theory is needed not only to ground the conceptual basis of a process study on strategy formulation, implementation, or some other substantive topic, but also to guide the design and conduct of empirical research. Thus, the second basic suggestion for studying strategy process is to clarify the theory of process underlying the substantive investigation.

Adopting the third meaning of process, Scott Poole and I conducted a literature review of the theories available to explain the process of development, defined as the sequence of change events that unfolds over the duration of an entity's existence—its formulation, implementation, growth, adaptation, and termination (Van de Ven and Poole, 1991). A selected set of keywords was used to conduct a computerized search of the literary data bases in various disciplines. Table 2 shows the number of times that the selected keywords appeared in the titles or abstracts of articles in the data bases.³

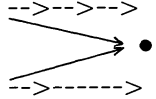
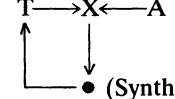
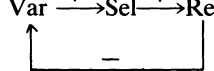
Using factors of 10 to reduce complexity, we reviewed about 200,000 titles, perused about 20,000 abstracts, which lead us to read 2,000 papers, about 200 of which were found useful to identify about 20 different theories of development or change, which in turn, can be classified

³ It is incredible that we know so little about development and change processes after a half-million articles have been written about this subject in various disciplines!

Table 2. Number of occurrences of keywords in titles and abstracts of articles in literary data bases

Basic Discipline --> Data base --> Year --> Present	Biology Biosis 1966 ->	Meteorology Met/Geo 1970 ->	Geography Georef 1785 -> Sept. 91	Medicine Medline 1966 ->	Psychology Psyclit 1974 -> 1991	Education Eric 1966 ->	Sociology Sociofile 1974 -> Aug. 91	Bus & Econ ABI Inform Nov. 86 -> Oct. 91
Keywords								
Development	295,868	9,839	39,597	312,853	73,861	227,191	35,454	44,791
Change	155,693	6,956	6,579	131,934	27,440	71,269	20,320	35,227
Change process	6,451	0	2	5,235	2,126	5,184	89	125

Table 3. Families of theories on development and change processes

Family	Life cycle	Teleology	Dialectic	Evolution
Members	Developmentalism Biogenesis Ontogenesis Stage theories	Functionalism Religions/utopias Goal/planning models Enactment theories Rational choice	Conflict Deconstruction Pluralism Bifurcation theories Polyphonic themes	Darwinian evolution Punctuated equilibrium Saltationism Gradualism Lamarckian evolution
Pioneers	Nisbet, Piaget	Weber, Parsons	Marx, Freud	Darwin, Gould, Campbell
Logic:	imminence prefigured program continuity ●-->-->-->	envisioned end state social construction equifinality -->-->-->  -->-->-->	contradictory forces thesis, antithesis, synthesis T→X←A  ● (Synthesis)	natural selection of organisms and species Var $\xrightarrow{+}$ Sel $\xrightarrow{+}$ Ret 
Event progression:	unitary sequence of stages moving to a progressive differentiation of entity regulated by natural or institutional laws.	multiple cumulative sequence of planning, implementation, and adaptation of alternative means to reach desired end state	recurrent convergence of multiple divergent progression mediated by partisan struggle between contradictory values or events	recurrent, cumulative & conjunctive sequence of variation, selection & retention events
Conditions:	programs/routines or rules prescribed by nature, logic, or institutions	purposeful, adaptive interactive choice, collective action and learning	pluralistic, diverse contradictory, colliding sequences of events or values	scarcity commensalism population dynamics

Source: A. Van de Ven and M. S. Poole (1991), 'In Search of Theories on Development and Change processes', Minneapolis: Univ. of Minnesota, Strategic Management Research Center, Working Paper.

into four basic families of theories. The four families of process theories are outlined in Table 3, along with their members, pioneering scholars, logic, event progressions, and conditions in which they are likely to operate.

Life cycle, teleology, dialectics, and evolution are viewed as abstract ideal types of theories of change processes. These ideal types are based on fundamentally different logics, which represent the underlying generative mechanisms or laws (Tsoukas, 1989) that explain why observed events occur in particular sequence progressions when specific circumstances or conditions exist. In practice, of course, scholars across disciplines often combine elements of these ideal types of theories to explain observed processes of change and development in the subjects or objects under investigation. However, in so doing the conceptual basis of applied theories can easily become confounded and incoherent. This is because while the logic for each ideal type is internally consistent, borrowing elements from different types of theories may result in an incoherent concatenation of different logics. As Poole and Van de Ven (1989) discuss, conceptually more robust explanations of change emerge when scholars explicitly address and work out these logical inconsistencies when they borrow and combine elements from different types of theories in their applied theories of change processes.

Life cycle process theory

Life cycle theories include developmentalism (Nisbet, 1970), biogenesis (Featherman, 1986), ontogenesis (Baltes, Dittman-Kohli and Dixon, 1986), and a large number of stage theories of child development (Piaget, 1975), human development (Levinson, 1978), moral development (Kohlberg, 1969), organizational development (Greiner, 1972; Kimberly and Miles, 1980), group decision making (Bales and Strodtbeck, 1951; Poole and Roth, 1989; Gersick, 1988), and new venture development (Burgelman and Sayles, 1986).⁴ Next to teleology, life cycle is perhaps

the most used theory of development and change in the management literature.

Life cycle theory assumes that change is immanent; that is, the developing entity contains within it an underlying logic, program, or code that regulates the process of change and moves it from a given point of departure toward a subsequent end which is already prefigured in the present state. What lies latent, rudimentary, or homogeneous in the embryo or primitive state, becomes progressively more mature, complex, and differentiated. External environmental events and processes can influence how the immanent form expresses itself, but they are always mediated by the imminent logic, rules, or programs that govern development (Van de Ven and Poole, 1988: 37).

In terms of the vocabulary introduced before, the typical progression of a life cycle process of change is a unitary, cumulative, and conjunctive sequence of stages, because the trajectory to the final end state is prefigured and requires a specific historical sequence of events. Each of these events contributes a certain piece to the final product, and they must occur in a certain order, because each piece sets the stage for the next. Each stage of development can be seen as a necessary precursor of succeeding stages.

Life cycle theory is rooted in the approach of the gross anatomist in biology who observes a sequence of developing fetuses, concluding that each successive stage evolved from the previous one. Hence, Nisbet (1970) claimed that development is driven by some genetic code or prefigured program within the developing entity. Nisbet's interpretation has been expanded by Flavell (1982), who discusses a number of historically-driven processes of cognitive development in which each stage logically presupposes the next, as when the development of manipulative skills precedes writing. There is no reason to suppose organizational systems could not have such processes as well.

A life cycle theory of organizations often operates on the basis of institutional rules or programs that require developmental activities to progress in a prescribed sequence. For example, a legislative bill enacting state educational reform cannot be passed until it has been drafted and gone through the necessary House and Senate committees. So also, Garud and Van de Ven (this issue) describe the invariant sequence steps that are institutionally regulated by the U.S.

⁴ The classification of management and organization literature into the life cycle and other ideal types of theories in this paper is very loose and done for illustrative purposes only. Since very little attention has been given to underlying theories of change processes in the management and organization literature, it is difficult to know what specific theories of change the authors had in mind.

Food and Drug Administration which all firms must follow to develop and commercialize a new biomedical product in the U.S. Of course, there are teleological components to this institutional life cycle. For example, firms may choose not to engage in legislation or biomedical product development; but if they do they have no recourse but to follow the institutionally required sequence of steps.

Teleology process theory

Another commonly understood family of process theories is teleology, which underlies many theories of administrative behavior, including: functionalism (Merton, 1968), decision making (March and Simon, 1958); epigenesis (Etzioni, 1963), enactment (Weick, 1979), voluntarism (Parsons, 1951), adaptive learning (March and Olsen, 1976), and most models of strategic planning and goal setting (Chakravarthy and Lorange, 1991). A teleology process theory is based on the assumption that the developing entity is purposeful and adaptive; by itself or in interaction with others. It socially constructs an envisioned end state and selects from alternatives a course of action to reach it.

Unlike life cycle theory, teleology does not presume a necessary sequence of events, yet it does imply standards by which change can be judged. There is no prefigured rule or logically necessary direction to a teleological process. However, we are still able to assess when an entity is developing; it is growing more complex, or it is growing more integrated, or it is filling out a necessary set of functions. We are able to make this assessment, because teleological theories posit a standard of what an envisioned end state for an entity is and we are able to observe movement toward the end state.

This explanation draws on classical functional theory, which explains development in terms of movement toward some final goal or state of 'rest' (however temporary). This goal can be achieved via a number of paths, all tending toward the same endpoint. Teleological models of development incorporate the systems theory assumption of equifinality; there are several equally effective ways to achieve a given goal. There is no assumption about historical necessity. Rather, these models rely on voluntarism as the explanatory principle: they posit a set of functions

or goals desired by an organizational unit, which it has to acquire in order to 'realize' its aspirations. Development is movement toward attaining a purpose, goal, function, or desired end state.

That an entity attains this end state does not mean it stays in permanent equilibrium. Influences in the external environment or within the entity itself may create instabilities that push it to a new developmental path or trajectory. Theories that rely on a teleological process cannot specify what trajectory development will follow. They can at best list a set of possible paths, and rely on norms of rationality to prescribe certain paths.

Dialectic process theory

A third family of process theories, dialectics, begins with the assumption that the developing entity exists in a pluralistic world of colliding events, forces, or contradictory values which compete with each other for domination and control. These oppositions may be internal to the entity because it may be prefigured with contradictory laws or rules of development (i.e. incompatible life cycle programs), or it has multiple conflicting goals or teleologies. Oppositions may also arise external to the entity as it pursues developmental paths that collide with those of others. For example, Riegel (1975) proposes a dialectical theory of human development in which change in adults is brought about by contradictions within or between four interacting progressions of life events: inner biological, individual-psychological, cultural-sociological, and outer-physical forces. So also, Greiner (1972) proposes that tensions between revolutionary and evolutionary forces propel organizational growth through each stage of development shown in Table 1.

Stability and change with a dialectical process theory are explained by the relative balance of power between opposing forces. Stability is produced through partisan struggles and accommodations which maintain the *status quo* between oppositions. Change occurs when these opposing values, forces, or events go out of balance. The relative strength, power, or legitimacy of an antithesis may emerge or mobilize to a sufficient degree of force to overthrow the current thesis or state of affairs and produce a synthesis, which

then becomes the new thesis as the dialectical process recycles and continues.

More specifically, a process theory that focuses on the intercourse of opposites can explain organizational changes that move toward: (1) equilibrium, (2) oscillation, and (3) chaos. First, organizational stability and inertia result when the routines, goals, or values of the *status quo* are sufficiently dominant to suppress opposing minority positions, and thereby produce incremental adaptations flowing toward equilibrium. Such movements to equilibrium underlie exchange theories of conflict (Blau, 1964), models of organizational power (Pfeffer, 1981; Astley and Zajac, 1991), and planned organizational change (French and Bell, 1978). Second, organizational business cycles, technological regimes, and political contests occur when opposing forces alternate and push the organization somewhat farther from an equilibrium orbit. Such recurrent cycles are exemplified in models of vicious circles in organizations (Masuch, 1985), partisan mutual adjustment (Lindblom, 1965; Quinn, 1980), and creative destruction (Schumpeter, 1942). Third, organizational transformations and anomie are produced when strong oscillations occur between opposing forces that push the organization out of its equilibrium orbit and produce deconstructions (Martin, 1990), bifurcations (Prigogine and Stengers, 1984), and catastrophes (Zeeman, 1976) leading to chaos. Thus, different patterns for resolving dialectical oppositions can push an organization to flow toward equilibrium, to oscillate in cycles between opposites, or to bifurcate far from equilibrium and spontaneously create revolutionary changes.

Evolution process theory

Although evolution is sometimes equated with change, as a specific family of process theories we use evolution in a more restrictive sense to focus on cumulative changes in structural forms of populations of organizational entities across communities, industries, or society at large (Campbell, 1969; Hannan and Freeman, 1977; Aldrich, 1979). As in biological evolution, change proceeds in a continuous process of variation, selection, and retention. Variations, the creation of novel forms are often viewed to emerge by random chance; they just happen (Aldrich, 1979). Selection occurs principally through the

competition among forms, and the environment selects those forms which optimize or are best suited to the resource base of an environmental niche (Hannan and Freeman, 1977: 939). Retention involves the forces (including inertia and persistence) that perpetuate and maintain certain organizational forms. Retention serves to counteract the self-reinforcing loop between variations and selection. Weick (1979) and Pfeffer (1982) note that while variations stimulate the selection of new organizational forms, retention works to maintain those forms and practices that were selected in the past. Thus, evolution explains change as a recurrent, cumulative, and probabilistic progression of variation, selection, and retention.

In organization and management applications, evolutionary theory is often used to depict global changes in organizational populations (e.g. Carroll and Hannan, 1989), although Burgelman (1991) and Singh (1990) have adopted the evolutionary model to explain processes of strategy making within organizations, and Weick (1979) and Gersick (1990) have applied evolution at an even more micro level to explain social-psychological processes of organizing.

Alternative theories of social evolution can be distinguished in terms of how traits can be inherited, whether change proceeds gradually and incrementally or rapidly and radically, and whether the unit of analysis focuses on populations of organisms or species. Social Darwinists (such as Hannan and Freeman, 1977; 1989; McKelvey, 1982; Nelson and Winter, 1982) argue that traits can be inherited only through intergenerational processes, whereas Lamarkian and cultural evolutionary theorists (Boyd and Richerson, 1985; Weick, 1979; Burgelman, 1991; and Singh, 1990) argue that traits can be acquired within a generation through learning and imitation. A Lamarkian view on the acquisition of traits appears more appropriate than strict Darwinism for organization and management applications of social evolution theory. To date, strict social Darwinists have developed no adequate solutions to operationally identify an organizational generation and an intergenerational transmission vehicle.

Social Darwinian theorists emphasize a continuous and gradual process of evolution. In *The Origin of Species*, Darwin (1936: 361) wrote, 'as natural selection acts solely by accumulating

slight, successive, favourable variations, it can produce no great or sudden modifications; it can act only by short and slow steps.' Other evolutionists posit a saltational theory of evolution, such as punctuated equilibrium (Gould and Eldrich, 1977; Arnold and Fristrup, 1982), which Tushman and Romanelli (1985) and Gersick (1991) introduced to the management literature. Whether an evolutionary change proceeds at gradual vs. saltational rates is an empirical matter, for the rate of change does not fundamentally alter the theory of evolution—at least as it has been adopted thus far by strategy scholars. However, measurement of the rate of evolutionary change is a formidable empirical challenge. The French author and aviator, Saint Exupery, aptly stated 'the time which adds something new is by no means the same as the time which spreads itself out' (quotation in De Rosney, 1970). The time required for phylogenesis (the generation of originals through variation or speciation processes) is much greater and less predictable than the time required for ontogenesis (the reproduction of originals through selection and adaptation processes). Empirically, the different temporal durations involved in the generation vs. the reproduction of originals in the social sciences are very difficult to determine, because the nature of uncertainty is profoundly different; in ontogenesis the improbability of reproduction is given at the beginning, while in phylogenesis the improbability of origination is gathered at the end of the process. Thus, the temporal duration of generating an original can only be known retrospectively after the fact, while the temporal duration of reproducing originals can be determined prospectively before the fact.

The paleontologist, Gould (1989), has argued that another basic distinction between Darwinian evolution and his punctuated equilibrium theory is hierarchical level. This distinction has not yet been incorporated in the management literature, but ought to be. Gould (1989) points out that classical Darwinism locates the sorting of evolutionary change at a single level of objects. This sorting is natural selection operating through the differential births and deaths of organisms, as exemplified in many recent studies on organizational birth and death rates by population ecologists (see reviews in Carroll and Hannan, 1989, and Hannan and Freeman, 1989). The

punctuated equilibrium model adds a hierarchical dimension to evolutionary theory by distinguishing this *sorting* (a description of differential birth and death) from *species selection* (a causal claim about the basis of sorting). 'Speciation is a property of populations (organisms do not speciate), while extinction [a sorting process] is often a simple concatenation of deaths among organisms' (Gould, 1989: 122). This multilevel view of evolution is extended by Arnold and Fristrup (1982), who emphasize that adaptation and selection can occur at multiple levels (both the species and organism levels). Adaptation is the class of heritable characters that have a positive influence on the fitness of an organism within a constraining situation. Selection focuses on the evolutionary process of choosing new situations (i.e. variations). So selection assumes variation, while adaptation assumes fitting within a selected environment (Arnold and Fristrup, 1982: 119).

In conclusion, we might think of these alternative families of process theories as having three components: a set of starting conditions, a functional end-point, and an emergent process of change. Life cycle theory incorporates all three parts, although it largely directs attention to the starting input conditions of institutional rules, customs, or habits that prescribe programs or routines of action that must be followed in developing an organization entity. By describing in some detail a required stage sequence, a life cycle theory implies a final state and a process of change. Of course, these latter parts are often left implicit in the description of stages. A teleological theory has two of the components, although its central emphasis is on visions of future goals or final end states of an organizational entity. At the outset, it does not specify a required sequence of events or stages, but it does describe the form of organization which is the end-point of the development, and, by implication, the process for getting to the end. Thus, both life cycle and teleological theories are predictive. Dialectical and evolutionary theories center on the means of action themselves; i.e. the dynamic process of social construction and transformation of alternative forms within and across generations of competing organizational routines, forms and institutions. Dialectical and evolutionary theories explain only how change and development occur, along with indicators to

enable us to identify key developmental constructs (e.g. selection, action loops) at any point in time. While dialectical and evolutionary theories provide rich explanations of emergent processes of change, they are not predictive; they are only explanatory process theories.

DESIGN RESEARCH TO OBSERVE PROCESS

Most studies of strategy process to date have been retrospective case histories conducted after the outcomes were known. However, it is widely recognized that prior knowledge of the success or failure of a strategic change effort invariably biases a study's findings. While historical analysis is necessary for examining many questions and concerted efforts can be undertaken to minimize bias, it is generally better, if possible, to initiate historical study before the outcomes of a strategic change process become known. It is even better to undertake real-time study of strategic change processes as they unfold in their natural field settings.

Time itself, sets a frame of reference which directly affects our perceptions of change. As Pettigrew (1985) notes, the more we look at present-day events, the easier it is to identify change; the longer we stay with an emergent process and the further back we go to disentangle its origins, the more likely we are to identify continuities. Appreciating this dilemma motivates my third recommendation that investigators carefully design their studies to observe strategy process in such a way that is consistent with their definition and theory of process.

For example, if the purpose of a study is to understand how to manage the formulation or implementation of an organizational strategy, it will be necessary for researchers to place themselves into the manager's temporal and contextual frames of reference. Presumably, this would initially involve conducting a retrospective case history to understand the context and events leading up to the present strategy being investigated. However, the major focus of the study would entail conducting real-time observations of the events and activities in strategy development while they occur in time, and without knowing *a priori* the outcomes of these events and activities.

Regularly scheduled and intermittent real-time observations are necessary to observe if and how changes occur over time. Repetitive surveys and interviews provide comparative-static observations of the organizational unit or strategy being tracked over time. Difference scores between time periods on these dimensions would determine if and what changes occurred in the organizational unit or strategy. But to understand how these changes came about, there is a need to supplement regularly-scheduled data collection with intermittent real-time data. For example, this would involve observing key committee meetings, decision or crisis events, and conducting informal discussions with key organizational participants. Thus, while difference scores on dimensions measured through regularly scheduled surveys and interviews identify *if* and *what* changes occurred, real-time observations are needed to understand *how* these changes occurred.

As Argyris (1968; 1985) has forcefully argued over the years, significant new methods and skills of action science are called for to conduct this kind of longitudinal real-time research. In addition, it implies significant researcher commitment and organizational access, which few researchers have achieved to date. As a consequence, very few developmental studies of strategy formulation and implementation have been conducted. One reason why gaining organizational access has been problematic is because researchers seldom place themselves into the manager's frame of reference to conduct their studies. As Van de Ven, Angle, and Poole (1989) discuss, without observing a change process from a manager's perspective, it becomes difficult (if not impossible) for an investigator to understand the dynamics confronting managers who are involved in a strategic change effort, and thereby generate new knowledge that advances the theory and practice of strategy process.

Furthermore, if organizational participants do not understand the relevance of a study, there is little to motivate their providing access and information to an investigator. At issue here is *not* that strategic management research incorporates elements of consulting practice. The issue is one of formulating and addressing important research questions that capture the attention and motivation of scholars and practitioners alike in the merits for studying them. Clearly, the outcomes

of research on an important question may not provide immediate pay-offs to practitioners or academics. Often by definition, truly important research questions do not have clear solutions until after the research has been conducted. If solutions are well known in advance of the research, the question may be appropriate for consulting practice or an internal management study, but clearly not for basic scientific research. Thus, at the time of designing research and negotiating access to organizations, prospective solutions to applied problems are secondary in comparison with the importance of the research question. A good indicator of such a research question is its self-evident capability (when properly articulated) to motivate attention and enthusiasm of scholars and practitioners alike.

In launching our Minnesota Innovation Research Program (see Van de Ven *et al.*, 1989), we found that a useful way to begin this kind of longitudinal research is to conduct meetings (often with a served breakfast or lunch) with small groups (eight to twelve) managers or representatives of various organizations which were about to initiate comparable strategic change efforts or ventures in their natural organizational settings. In these hour-and-a-half meetings we introduced our research question (e.g. 'How and why do innovations develop over time?'), discussed why it is important to advancing theory and practice, and outlined a longitudinal real-time research strategy for studying the research question in comparable field settings over time. Participants then shared their opinions of the research question, why it was important or useful to study, and how the research design might be modified to make it workable in their organizational settings. The meetings concluded by thanking participants for their useful ideas and indicating that we would contact them individually to negotiate access to study the question in their organizational settings. Following these meetings, the research design was modified as deemed necessary, and negotiations began with individual organizations. A substantial subset of those represented at the meetings agreed to provide access to conduct the research.

Having negotiated access to a manageable (small) number of comparable organizational sites, the longitudinal research can begin by undertaking the following basic steps. (See Van de Ven and Poole (1989; 1990) for detailed

procedures in each step.) First, it is often necessary to obtain baseline information and develop a retrospective case history of the context and events leading up to the present venture being investigated. While the historical baseline is being developed, real-time study can begin using a variety of data collection methods, and by attending and observing regularly scheduled meetings of the management team, administrative review meetings, and conferences related to the venture being investigated as it unfolds over time.

Researchers could use an event as the datum, or unit of observation, and record all the events that occur as the venture develops over time. Events require careful definition, and vary with the subject and concepts being investigated. Only by being clear about the subject and conceptual categories does the researcher know 'what' events/activities to record, and 'where' to look for them. If the researcher doesn't look in the 'right' place, then nothing may be recorded, or if the conceptual category is too broad, it can include confounding data. For example, in our study of the internal corporate venturing process, Garud and Van de Ven (this issue) defined events as instances when changes were observed to occur in each of the constructs of the conceptual model: i.e. in the innovation idea and activities, personnel appointments and roles, unit relationships with others, environmental and organizational context, and outcomes.

Data on the occurrence of each event could be entered into a qualitative computer data base (such as Rbase), and at a minimum should include the date, actor, action, outcome (if observable), and data source. A chronological recording of these events as they occur over time becomes the 'raw' data base. Each of these events is then coded on a set of dichotomous variables, which reflect the presence/absence or occurrence/nonoccurrence of indicators selected to measure key constructs in one's conceptual model. For example, an indicator of strategy formulation might be to code each event in terms of whether actors did or did not articulate a change in ideas about the strategy.

This coded event sequence data base can then be analyzed in terms of the vocabulary and alternative forms of temporal progressions discussed before. Unfortunately, space limitations prevent an adequate discussion of the data

analysis problems of identifying patterns in event sequence data and of inferring what they mean. Obviously, event sequence data do not necessarily speak for themselves. Van de Ven and Poole (1989) discuss some of the steps involved in drawing statistical and conceptual inferences from event sequence data. Abbott (1990) proposes methods for identifying temporal sequence patterns among coded events in such a dataset. In addition, substantive models of strategy process can be evaluated by using log-linear and logit analysis on categorical time series data, and standard time series regression analysis on frequency counts of coded events computed for fixed temporal intervals (e.g. weekly, monthly, or quarterly intervals). Garud and Van de Ven (this issue), Van de Ven and Polley (1992), and Van de Ven and Garud (1992) illustrate this new methodology of event sequence analysis to examine process models of internal corporate venturing, trial-and-error learning, and the co-evolution of technological and institutional innovations, respectively.

CONCLUDING EXAMPLE OF SUGGESTIONS MADE (WITH REACTIONS FROM LARRY E. GREINER)

In conclusion, we must touch upon a few basic normative and teleological questions. Where do we go with this strategy process research and search for process models? Where do we want to end up? While readers may have different answers, my first suggestion, defines the meaning of process, implies that we not only want to *assume* or *describe* the occurrence of strategic change processes, we also want to *explain* how and why they occur. Scientifically valid explanation not only requires systematic procedures for observing and analyzing events as they occur over time (along the lines of my third suggestion), it also requires the development and evaluation of theories of the change process itself (the second suggestion). Hopefully this journey will yield more robust ways to understand how and why strategic change develops over time. Moreover, it may produce more constructive and penetrating dialogue among scholars and practitioners about their models of strategy process.

To illustrate this conclusion, let us reexamine Greiner's (1972) well-known model of organizational growth outlined on the bottom of Table 1. Greiner's model clearly uses the third meaning of process as a developmental sequence of events, and proposes that organizational growth progresses through five stages of evolution and revolution: (1) creativity and leadership, (2) direction and autonomy, (3) delegation and control, (4) coordination and red tape, and (5) collaboration and revitalization. Readers may wish to read footnotes 5–9 during this section, since they represent excerpts from an interesting and constructive dialogue that I carried on with Professor Greiner about my reexamination of his model.⁵

To evaluate the status of Greiner's applied theory, it is useful to recognize that he implicitly borrows conceptual elements from three of the ideal types of process theories. In so doing, Greiner's model contains a number of conceptual anomalies, which in turn suggest a number of promising areas for further theory building. In the main, the model is rooted in a life cycle theory of change, in which 'historical forces [organization age, size, growth rate, and stages of evolution and revolution] shape the future growth of organizations' (Greiner, 1972: 166). The quest for growth represents an underdeveloped teleological element in the model. Greiner states his position that 'the future of an organization may be less determined by outside forces than it is by the organization's history. . . [B]ehavior is determined primarily by previous events and experiences, not by what lies ahead' (p. 166). Beyond this introductory statement, the 'pull' of an envisioned end state of growth is largely

⁵ I sent a prepublication draft of this paper to Prof. Larry E. Greiner at the University of Southern California. He responded with a very useful set of comments, which not only clarify, amplify and correct my reexamination of his model, but also exemplify how the meanings, theories, and vocabulary of process suggested in this paper can facilitate more penetrating and constructive dialogue among scholars than in the past. In order to exemplify this constructive level of dialogue, I have not changed my reassessment of the model in the text from that which Prof. Greiner reviewed, and (with his permission) include his comments in footnotes to pertinent statements made in the text.

Greiner: You might give my article a little context in terms of time and place—since it was written in 1972, one of the first such models. I might add too that I think the model was the precursor if not the first 'punctuated equilibrium' model—at least Tushman has said this to me.

ignored by Greiner, as are considerations of alternative paths to achieve the desired end of growth; instead only one particular sequence of developmental stages is discussed. The term 'evolution' is used loosely to describe prolonged periods of growth where no major upheaval (or 'revolution') occurs in organizational practices. Thus, Greiner does not borrow conceptual elements from the ideal type evolutionary theory (as we have described it). He does, however, entertain dialectical theory by observing that 'as a company progresses through developmental phases, each evolutionary period creates its own revolution' (p. 166). However, with the exception of asserting the life cycle view that crises are immanent to each evolutionary stage, Greiner does not explain how these divergent forces emerge out of unitary progressions within each stage, and how these antagonistic forces converge and collide to mediate a synthesis in the next stage, as a dialectical theory would require.⁶ As

⁶ Greiner: 'This [sentence] hurts a bit because I tried very consciously to use dialectical explanation (without calling it that to HBR readers) throughout the evolving stages and crises. I think you will see this logic if you go through each stage's description, such as at the end of the Phase 2 description where I write, 'although the new directive techniques channel energy more efficiently into growth (thesis), they eventually become inappropriate for controlling a larger, more diverse and complex organization. Lower level employees find themselves restricted by a cumbersome and centralized hierarchy. . . . thus a crisis develops from demands for greater autonomy by lower level managers (antithesis). The synthesis link I then make (but perhaps not as explicitly as I should) when I introduce 'Delegation' in stage 3 as lower levels receive more autonomy—though this autonomy is different from the kind they were asking for—and this in turn becomes the new thesis. You or others might not agree with how I use dialectics or that I don't explain them clearly enough, but I can say that I was very conscious of it at the time, and I do think it is more evident in my more concrete explanations than you note. In fact, I have had past correspondence with some dialectical sociologists about the model's use of dialectics, which was quite uncommon at the time in management literature. I also think it is the dialectics that added the power struggle reality and made the article so successful in managerial reaction.

[But in agreement with you] I would say my model is a reasonably explicit attempt to combine unitary life cycle with dialectical theories—but not teleological. For me, life cycle explains the 'form' of the unitary stages, while the dialectics explain the underlying dynamics of movement. For example, I put the 'crises' in the model because I could not find data showing the stages as naturally and automatically evolving one after the other. Thus, it is not a model where a future life or end state is assured—(there are even divergent paths which are not really discussed in the article, such as failing to solve a crisis or dying if the crisis continues). My reason for saying it is not teleological is that there is no envisioned end state that pulls the process—for me it is the current

this overly brief critique suggests, a fruitful way to evaluate and extend applied models of process is to anchor the analysis in more basic and general theories of process.

To empirically examine Greiner's model (as formulated in 1972) from a developmental process perspective, one would ask the following kind of question, 'Does organizational growth commonly progress through the sequence of stages that Greiner proposes?' A key conceptual move for addressing this research question is to view Greiner's stages as categories of events, and not to assume that these categories of events occur in any particular sequence of progression over time. Thus, instead of viewing organizational growth as a unitary progression of a linear sequence of stages based on a life cycle theory of change, one is open to more empirical possibilities if the process of organizational growth is viewed in terms of a variety of other models of event progressions and theories of change process.

One way to do this is to adopt a research design as illustrated in Figure 1. In comparison with Greiner's initial formulation of the model in Table 1, this research design redefines the five stages of organizational evolution and the four revolutionary crises identified within the stages into nine conceptual tracks or categories of events, and shifts time from a vertical to horizontal axis.⁷ In so doing, one can not only gain a richer appreciation of how events pertaining to organizational evolution and revolution unfold over time, but also how the multiple tracks of event categories are related and thereby facilitate and constrain the overall process of organizational growth.

Guided by this research design, one could undertake longitudinal study of a number of organizations from birth to maturity. One would gather data on the chronological sequence of activities or events that occurred in the development of each organization. The observed activities

dynamics within the organization that are driving it forward—convergence around the thesis of each stage and then running into resistance (antithesis) and requiring reorientation for the conflict to be resolved. The model in fact has no ending and concludes with a question mark.

⁷ Van de Ven: A careful examination of the conceptual overlap between the nine substantive event categories in Greiner's model would prune the set to a smaller and more manageable number of tracks. However, we will not undertake this needed theory building task in this example.

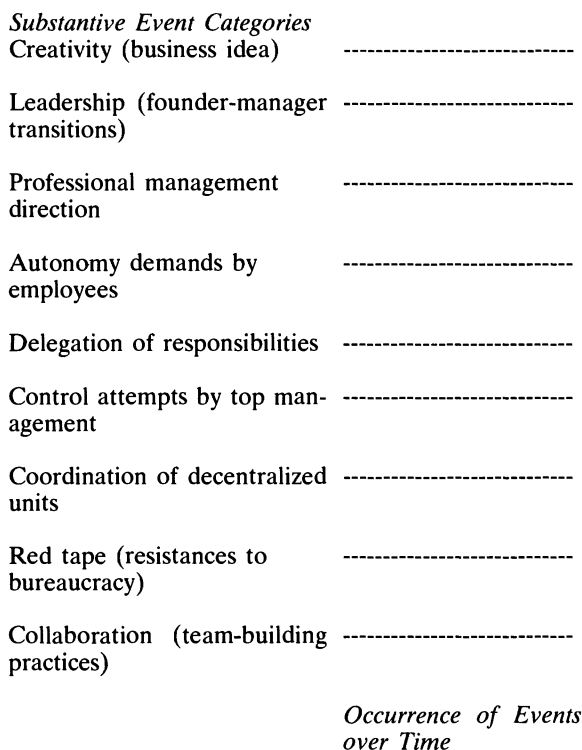


Figure 1. Research design for studying Greiner's model of organizational growth.

could then be coded along the nine event tracks or categories outlined in Figure 1. For example, the creativity track would not only include the occurrence of the initial business idea on which the organization was founded, it would also record all events that occurred to further invent, develop, and adapt the business idea (or strategy) of the organization. So also, the delegation track would include all events related to the decentralization of responsibilities, the establishment of profit centers and bonuses, top management restraints to managing by exception, and similar indicators of delegation activities described by Greiner (1972: 170–171). Clearly, events pertaining to each substantive event track listed in Figure 1 can occur repeatedly during the life of an organization, and often in no necessary temporal order. Recording events along these different substantive categories or tracks (rather than a single track as has been done in the past) greatly liberates one from the erroneous and confining assumption that the life cycle of

an organization proceeds in a simple unitary sequence of stages.

Event sequence analysis could begin after the field observations have concluded and events were coded along the conceptual tracks. This analysis would consist of identifying the order and sequence of events for each organization, and then comparing the observed sequence with the proposed sequence of events in Greiner's model. A strong test of Greiner's model would require that all⁸ events pertaining to creativity and leadership occur first, direction and autonomy second, delegation and control third, coordination and red tape fourth, and collaboration and revitalization last.

I doubt if empirical evidence from such a study will substantiate Greiner's model of organizational growth because no empirical support has been found for a unitary sequence of stages in other studies of innovation development (see Schroeder *et al.*, 1986). However, this conclusion is premature because (as stated before) very few longitudinal studies have examined the development of strategic change processes in general, and to my knowledge, no studies have specifically examined organizational growth as a developmental sequence of events along the lines suggested here.⁹

⁸ Greiner: My only concern here is with your use of the word 'all'—at least I would not argue for 'all,' though I would argue that the 'bulk' of events or the 'median' should occur during these time periods. While the HBR article draws a graphic line at the beginning and end of each stage in its pictorial portrayal to the reader, I have always said that there is bound to be 'slop over' between stages—for example, 'autonomy' concerns don't suddenly die away with initial attempts at 'delegation.'

[In the conclusion of his comments, Greiner states] Probably some of this you were unaware of because I could not explicitly discuss it in the article. I don't think my suggestions change your basic points and hopefully they add a little more clarification. . . . Messing with another person's piece of art is always a little tricky. But I hope you know my intentions are good, as I know yours are too.

⁹ Greiner: My sample was small, mostly secondary data, and limited largely to industrial/consumer goods companies. So there is a need for a larger more systematic study—and it's interesting that none has been conducted over all these years on my model or any others for that matter. Such a study might go beyond determining if in fact there is the linear order of stages and crises to find out: Are there different growth stages for different industries? Do companies that fail to grow pursue a different order of stages, or do they fail to resolve certain crises?

Future studies don't necessarily have to measure every aspect of every hypothesized stage to begin to check out the model. For example, each stage contains a clear statement about formal organization structure, which is usually public information. So just a pass at this issue would tell us a lot.

Hopefully, this 'call' for research on strategy process will trigger strategy scholars to engage in these conceptual and empirical issues. Moreover, in doing so, strategy scholars will also advance and modify the suggestions made here to clarify the meanings and theories of process, and methods for observing process.

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