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Special Issue Introduction: Evolutionary Logics of Strategy and Organization*

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Evolutionary Logics of Strategy and Organization

Why do some organizations outperform others? This fundamental question is a common thread running through the otherwise diverse theoretical approaches in the field of strategic management. For all their variety, these theoretical approaches can generally be divided into two types, depending on how they deal with this question. Most theories elaborate one or another logic linking the “content” of strategy—what organizations do, where they operate, how they compete—to their performance. For instance, social structural theories argue that firms well-positioned in organizational networks will outperform poorly positioned organizations (Bothner et al. 2010). Alternatively, transaction-cost theories point to advantages held by organizations that hinge on how they design their market interface (Williamson 1985). And of course industrial organization economics elaborates a neo-classical logic to explain advantages that depend on the structure of a firm’s industrial setting (McGahan and Porter 1997). Regardless of the specific logic at work, by and large, strategy “content” research expects that data observed at a given point in time will reveal patterns consistent with that logic.

In contrast, evolutionary perspectives direct our attention to the process through which strategy content comes about. By focusing on process, evolutionary theories problematize the mechanisms through which observed patterns come to be—mechanisms assumed to be unproblematic (and therefore uninteresting) to strategy content research. For most theories of strategy content, the researcher assumes (perhaps implicitly) that organizational policies and actions will conform

to whatever logic is argued to be best for the firm. In this way, such theories assume not only rational intent on the part of individual decision makers, but rational behavior on the part of firms—in that they are assumed to put into being policies and actions in line with the theory’s logic of what is best for the organization. Evolutionary theories relax this assumption. Typically, such theories assume only that organizational action is intendedly rational, but the constraints both of the history of prior choices and the uncertainty surrounding organizational behavior and environmental circumstances typically make the realization of strategy and organization very different from what might have been intended by the actors and what would be predicted by content theories. The process through which intended action becomes a realized strategy, then, is the focus of evolutionary strategic analysis.

The joint property of path-dependence and variability of outcomes implies, from an evolutionary perspective, that at any point in time we are likely to see considerable variation in the strategies and organizations that exist in any particular context—variation that need not reflect steady state conditions that would be predicted by any particular logic of the content of strategy (Hannan and Freeman 1989). Evolutionary processes of learning and selection operate on such variation, so that ultimate steady-state patterns we see in the world around us are the outcome of an evolutionary process (Aldrich and Ruef 2006). Evolutionary theories differ in the logics they employ when describing these processes. We review four such logics here, to give a sense of the very different predictions that can emerge from evolutionary thinking about strategy and organization—and to place in perspective the papers in this issue.

The Logic of Economic Selection

Many point to Alchian's (1950) influential paper as among the earliest departures from the strict assumption that organizations will behave according to the strategic logic that would be best for their performance. He argues that, given uncertainty, the actions of individual firms will vary, and one should look to the larger economic system to select from such variability. Thus, economic theories still have purchase, not so much because they predict the way that individual firms will behave, but because they elaborate the logic that guides selection by the economic system. Alchian thereby invokes a parallel between economic science and evolutionary biology: "Like the biologist, the economist predicts the effects of environmental changes on the surviving class of living organisms; the economist need not assume that each participant is aware of, or acts according to, his cost and demand situation" (pp. 220–221). This form of evolutionary thinking has continued among many economists, most notably in the work of Nelson and Winter (1982) and their colleagues.

The extreme form of the logic of economic selection appears in Friedman's (1953) "as if" argument. Responding to critics of economic theory, Friedman argues that although behavior might often depart from that assumed by economic models, the researcher can rely on selection processes to correct for such departures. The world will still reflect the predictions of economic theory, then, "as if" the theory had been a correct description of behavior. As Friedman puts it, "Let the apparent immediate determinant of business behavior be anything at all—habitual reaction, random chance, or whatnot. Whenever this determinant happens to lead to behavior consistent with rational and informed maximization of returns, the business will prosper and acquire resources with which to expand; whenever it does not, the business will tend to lose resources and can be kept in existence only by the addition of resources from outside. The process of 'natural selection' thus helps to validate the hypothesis..." (1953, p. 22).

In fairness, Alchian's formulation of the economic selection argument is much milder than Friedman's in that Alchian notes that economic selection will lead only to relatively superior outcomes—not necessarily optimization. Friedman clearly argues for optimization, in that the "as if" argument is used as his defense for maintaining strong assumptions about rational behavior. Winter (1964) takes on the challenge of considering what the necessary conditions are such that an evolutionary dynamic would in fact correspond to the behavior of profit-maximizing firms. To the extent that the logic of economic selection holds, an evolutionary theory of strategy describes an adjustment process through which the world produces a distribution of

outcomes consistent with what would be predicted by economic theories of strategy content.

The Logic of Partial Adjustment

The logic of economic selection assumes that evolutionary processes act rapidly enough to bring about, one way or another, the patterns predicted by theories of strategy content. But what if these evolutionary processes adjust slowly? It takes time for organizational founding and failure to occur, and for processes of change to unfold among individual organizations (Hannan and Freeman 1989). Consequently, observed patterns at any point in time may not reflect the steady-state conditions that would be predicted by a theory of strategy content. The slower the rate of adjustment, the more likely it is that such disequilibrium conditions will be observed. Researchers expecting to see patterns in cross-sectional data that are consistent with their theory of strategy content will be seriously misled in such situations. This property is particularly salient when one considers the structure of industries over time, whether measured by number of organizations or their size distribution. Classic industrial organization economics treatments focus on factors such as economies of scale, but such arguments have little to say to the dramatic dynamics that industries experience. Even explicitly evolutionary treatments, such as Klepper (1996), subordinate the issue of scale adjustment—a critical property that Knudsen et al. (2014) term "hidden in plain sight." More generally, an organization's strategy and performance at a given point in time may not reflect the patterns that would be true if adjustment to steady-state conditions were allowed to play itself out. In that case, evolutionary models of strategy should explicitly allow for the logic of partial adjustment.

At the firm-level, the issue of path-dependence has been treated from both a "glass half full" and a "glass half empty" perspective. Behavioral accounts tend to emphasize path dependence in the form of how the firm's prior history of investments and capability development constrain the set of accessible states in subsequent periods. Rational choice accounts, particularly work on real options, have the "glass half filled" sensibility of drawing attention to how antecedent investments can increase the range of subsequent accessible states. Whether forward-looking as in the case of real options or backward-looking as in accounts that highlight the constraints of prior choices, the critical underlying issue is the nature of transitions from one state to another. The more channeling and restrictive the prior choices, the more incumbent it is upon researchers to attend to these processes of partial adjustment.

In this spirit, Barnett et al. (1994) develop an evolutionary model of organizational performance that

explicitly builds in the logic of partial adjustment. Their model allows steady-state performance of an organization to be a function of its capabilities and position, and then specifies observed changes in performance as a process of partial adjustment toward that steady state. By explicitly estimating the different rates of adjustment for different strategies, they are able to correct for serious biases—and thereby identify the strategic advantages of the different organizations in their data. The relative effectiveness of the different strategies under study would not have been revealed without an explicit model allowing for the logic of partial adjustment.

The presence of processes of partial adjustment have important implications for our understanding of the dynamics of selection processes. Many models of organizational learning treat learning in a benign simulation environment in which adaptation only takes place at the organization level and the efficacy of alternative adaptive processes can be understood by examining differential performance levels after some arbitrary time period has elapsed or a steady state has been achieved. However, actual organizations do not operate in such benign environments. Asymptotic properties of learning processes are of less interest when organizations are subject to selection pressures in route to this possible asymptote. Levinthal and Posen (2007) highlight the myopia of selection processes and examine the limits to the efficiency of selection processes in the context of a population of adaptive organizations.

Carroll and Harrison (1994) looked at the problem of partial adjustment in models of competition among organizations, where the attributes of individual organizations are fixed but population-level effects of legitimacy and competition are present. They begin by echoing March and Olsen's (1989) concern that many theories of organization are based implicitly on an assumption of "historical efficiency," in that they make predictions about the patterns we can expect to see in the world without regard for the historical processes through which those patterns emerge. They note that such an approach is problematic if competitive systems take time to move toward steady state, and then estimate the process of adjustment in density-dependent competition models calibrated to reflect evidence from a large empirical literature. These models reveal that density-dependent competition among organizations takes a very long time to approach steady-state conditions. What's more, in many cases weaker strategies fail to be supplanted by stronger strategies, if the weaker strategies gain a sufficient foothold early on. Combined, these results point to the need to explicitly consider the evolutionary process through which organizations and industries evolve. In particular, the logic of partial adjustment calls into question conclusions

drawn from cross sectional data under assumptions of steady-state equilibrium.

In this special issue, the paper by Denrell, Liu, and Le Mens is an example of theorizing about the logic of partial adjustment. This paper demonstrates that adjustment through selection may favor less-skilled organizations, depending on how noisy the process of adjustment is over time. Their model allows performance to depend on current-period skill as well as on a noise term. When that noise term is autocorrelated and drawn from a "fat tail" distribution, then as time passes, instances of very good performance are likely to result more from the noise term than from the skill term. In this way, such a process evolves in a very counterintuitive way, disfavoring the most skilled firms in the population. As this paper illustrates, allowing for a logic of partial adjustment in an evolutionary model can generate outcomes directly opposed to those predicted in "as if" theories of economic selection.

The Logic of Organizational Learning

Clearly, individual organizations and their strategies change over time as they learn from experience (Greve 2003). A large body of research on organizational learning exists, and is an important part of the literature on organizational and strategic evolution. For the most part, organizational learning is modelled in the spirit of Argote et al. (1990), where a positive relationship between experience and performance is seen as *prima facie* evidence of organizational learning. These models allow for complex dynamics, including forgetting (e.g., Benkard 2000), but they remain essentially in the tradition where they relate experience to performance. The thrust of these models is entirely consistent with the logic of economic selection, in that strategic advantages do not come about right away but instead develop over time through learning.

In contrast, the logic of organizational learning in the tradition of James March and his colleagues allows for evolutionary processes that tend to decouple, or at least make loosely coupled, the relationship between the accumulation of experience and performance. These models typically allow experience to affect the accumulation of capabilities, but then separately address how those capabilities affect performance. In some cases, when circumstances change, capabilities learned by organizations may be especially inappropriate for the conditions under which they find themselves. This outcome leads to lower performance as the organization finds itself in a "competency trap" (Levinthal and March 1981). Therefore, this more complete model of the evolution of capabilities allows for negative outcomes that are not automatically corrected by organizational learning; in fact, these negative outcomes arise precisely because organizations learn.

The logic of organizational learning has also been directed to the study of competition. Barnett develops a model of “Red Queen” competition, where competition triggers learning, which intensifies competition, again triggering learning in a self-exciting process (Barnett 2008). This work demonstrates improvement in organizational performance as a result of exposure to competition, but it also shows evidence that learning backfires when conditions change—consistent with the idea that learning can move organizations into a competency trap. Again, a more complete elaboration of the logic of organizational learning helps us understand why strategic evolution often leads to unanticipated consequences, and to circumstances where organizations find themselves at a disadvantage for the very reasons that, in previous eras, had worked to their advantage.

This issue includes a methodological contribution by Bennett and Snyder that speaks directly to researchers working on the logic of organizational learning. Their paper explains and demonstrates that occurrence-dependent models of learning from failure can yield apparent evidence of learning due to induced-slope and unit-root problems. Occurrence-dependent specifications are common in the literature. They typically include in a model of performance a measure of the cumulative number of events—such as experiences of failure—and then estimate the effect of this term on performance. A positive effect of cumulative failures on performance is typically seen as evidence that organizational learning has occurred. Yet Bennett and Snyder demonstrate that cumulative counts of this sort will necessarily be found to be positively related to performance, even when no learning takes place and there is no underlying “true” positive relationship. This methodological contribution should be taken very seriously by the field, given the prevalence of occurrence-dependent models in the literature.

The Logic of Evolutionary Complexity

Organizations are complex systems because they have multiple, interdependent parts, and often evolve along multiple, interdependent selection criteria. In highly rationalized models of organizations, such as the economic theory of organizational complementarities, complexity offers the possibility of high performance levels for organizations through tight fit among the firm’s policy choices (Milgrom and Roberts 1992, Porter 1996). But in evolutionary perspective, complexity has very different consequences—often severely hindering the effectiveness of attempts to adapt. Levinthal (1997) applies complexity theory to strategy and organizations, finding that with increased complexity, the ability of organizations to identify and move to locations where their performance is improved falls considerably. Complexity increases the number

of ways that misaligned parts of an organization can reduce the performance of other parts of the organization. Consequently, complexity harms the ability of the system to learn and adapt based on performance feedback.

Within this special issue, Cattani, Dunbar, and Shapira’s paper uses a case to illustrate how remaining constrained to a “local” optimum can serve to differentiate a firm within a population of other strategists that search more globally. Drawing on complexity theory, they note the constraints that result from an organization remaining true to its initial identity, but then they note the advantages gained from this strategy in terms of uniqueness. Organizations able and willing to search more broadly did find more attractive, global optima, but to do so they forfeited the distinctiveness that is enjoyed by organizations remaining true to their initial strategic position and identity.

Another version of evolutionary complexity is raised by researchers in general evolutionary theory, where it is argued that selection processes often bring about dysfunctional consequences when disadvantageous characteristics “hitchhike” alongside favored ones and increase in prevalence despite the disadvantages they carry (see Sober 1984, on “pleiotropy”). In this spirit, Barnett (1997) develops a theory of “compensatory fitness” identifying a process through which strong selection processes will favor especially weak organizations. His model assumes that large organizations enjoy institutional advantages that protect them from selection pressures. As a result, their failure rates are lower even when they lack competitive strength. Small organizations, by comparison, are especially potent competitors if they do survive, since small organizations do not enjoy institutional protection from being deselected. Consequently, after selection has played itself out, large survivors are predicted (and found) to generate weaker competition—despite, and in fact because, they are so likely to survive. In this way, Barnett’s model of compensatory fitness allows for the survival of weak competitors—clearly a deviation from “as if” reasoning.

Perhaps the most complex evolutionary models are those that allow for coevolution, where selection and adaptation occur on multiple, inter-related dimensions (Durham 1991). In this issue, Pontikes and Barnett model the coevolution of organizations both in knowledge space and market space, arguing that the efficacy of selection in market space depends on the position of organizations in knowledge space. Specifically, they predict and find that organizations require a consistent commitment in knowledge space to apply that knowledge in market space. As a result, organizations are less able to move into advantageous areas of market space unless they have already been well positioned to do so in knowledge space. Quick-to-change organizations are

thus disadvantaged; they show up in knowledge space once a given location is known to be valuable, but lacking a consistent historical commitment that knowledge position does them less good in market space. This finding calls into question the often-heard folk wisdom that the most adaptive organizations are those that can most quickly move into new and promising areas.

Conclusion

While the bulk of strategic management research elaborates one or another logic of strategy content, evolutionary perspectives shift the focus to the process through which the content of strategy comes about. How that process is understood depends on the evolutionary logic used by the researcher. Here we have reviewed four distinct evolutionary logics, starting with the baseline “as if” reasoning used traditionally in the theory of economic selection. That reasoning sees the evolutionary process as largely unproblematic, ultimately giving rise to the patterns that are argued to be important in strategy content research. More complete models of the evolutionary process, however, yield very different results. The logics of partial adjustment, organizational learning, and evolutionary complexity each predict that strategies and organizations evolve in ways that deviate from the ideal. In many cases, these logics predict the evolution of failing strategies and organizations—despite and even because of the strong selection processes operating in the environment.

Given that the organizational world is replete with organizational failure and unanticipated consequences of strategic action—even among firms that were at one time considered superior performers—the logics of evolutionary theory seem particularly appropriate for the organizational world of today. The papers in this special issue, we think, show that the evolutionary approach to strategy is alive and well, and illuminate patterns that can only be seen through an evolutionary lens.

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