

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/329238777>

Organizational evolution

Chapter · January 2009

DOI: 10.4135/9781412956246.n367

CITATIONS

0

READS

113

2 authors, including:



Maurizio Zollo

Imperial College London

15 PUBLICATIONS 356 CITATIONS

SEE PROFILE

ORGANIZATIONAL EVOLUTION

How do organizations change over time? An evolutionary perspective on the fundamental problem of organizational change may be defined—inductively—on the basis of a number of distinctive underlying claims.

Conceptual Overview

To be recognized as evolutionary, attempts to understand processes of organizational change must be based on a combination of at least some of the following seven claims: (1) Evolutionary change is a process that requires little or no foresight; (2) organizations change is a consequence of problem-driven, trial-and-error search; (3) search is primarily local, conducted in proximity to current knowledge domains; (4) organizations learn by encoding past experiences into routines that guide and constrain future behavior; (5) routines evolve through variation, selection, and retention processes primed by external or internal stimuli; (6) organizational evolution is embedded in an environmental (e.g., industry) evolutionary process characterized by variation, selection, and retention processes based on the creation, growth, and decay of organizations and new organizational forms; and (7) the evolution of organizations and their environments unfolds in highly interactive and complex ways, impinging on each other's variation, selection, and retention processes.

The general view that emerges from the composition of these various claims corresponds to Lindblom's view of organizations as entities that "muddle through" in search of improvement of their set of interdependent operational and administrative routines. A variety of learning processes may be triggered, possibly based on performance feedback, as well as on deliberate investments in internal sensemaking and external screening. Levitt and March have argued that organizational learning is routine based, history dependent, and target oriented. Organizations learn by encoding inferences from history into routines that guide behavior. According to this view, processes of material transformation, encoded in operating routines, and processes of organizational learning and change, or dynamic capabilities,

cannot be understood separately but only in reference to each other and as dependent from a combination of experiential (on-line), as well as deliberate (off-line), learning processes. The logic of mutual constitution that defines the relation between production, learning, and organizational change can be the starting point for developing a truly evolutionary understanding of organizations.

The idea that an organizational system can respond adaptively to the challenges posed by environmental change by reproducing internally the basic dynamics of an evolutionary process is not new. The way in which the stable (but not fixed) elements of an organization change over time is described as a continuous process of generation of ideas for improvement of the status quo (*variation*), of evaluation and screening of the change proposals to identify those worthy of implementation (*internal selection*), and finally, of translating the selected ideas into either novel or adapted routines (*retention*).

The implications of these three basic evolutionary subprocesses are recurrently documented in contemporary organizational research. The typical example of processes responsible for producing variation is innovation. Innovations can differ widely. They may take the form of the appearance of a new organizational form. They could concern the emergence of a new technology. Marginal adjustments of uncountable operating routines inside each organization might signal innovation, or innovation could arise from large-scale legal and institutional change. Both within and among organizations, processes of selection may be triggered by rational evaluations of expected consequences, but more often than not, they will be triggered by competition for scarce resources, as well as by pressures to conform to institutionalized norms. Finally, organizational processes of retention have been associated frequently with specialization, standardization of roles and processes (routinization), and the stabilization of decision-making processes.

Recent research has discussed *replication* as a fourth possible component of the evolutionary process, located between selection and retention. Replication is typically viewed as related to the diffusion of the selected ideas to all the organizational

contexts where a new routine is relevant. The process of replication goes beyond the standard notions of transfer of best practices; it involves the adaptation of the change proposal to the local context and the progressive discovery of the power and the boundaries of the novel insight.

Critical Commentary and Future Directions

During the past quarter of a century, evolutionary interpretations have made available new solutions but have also posed new theoretical questions and empirical challenges to students of organizations. One challenge for the development of a comprehensive theory of organizational evolution is the identification of the mechanisms characterizing change processes in the stable antecedents of behavior: cognitive frames, aspirations and goals, emotional traits, values and belief structures, to name only a few. If routinized (collective) behavior is to be understood as the fundamental evolutionary unit, then a complete theory of how that type of behavior arises and evolves cannot progress without clarity about the way the factors underlying behavior (in general, and routinized behavior in particular) evolve. Another, primarily self-imposed, limitation in the theoretical apparatus developed to understand organizational evolution has to do with the focus on operating routines and the innovation processes responsible for their adaptation. Whereas this is a crucial part of the explanation of how organizations evolve, one cannot fail to note that there are other components, such as strategies, organizational arrangements, cultural traits, and organizational identity, all fundamentally involved in processes of organizational evolution but still today largely ignored by the theory.

Within evolutionary theories of organization, one of the main issues still awaiting serious scrutiny is related to the ambiguity of the distinction between organizational genotypes and phenotypes. With their traditional emphasis on behavior, evolutionary theories of organizations tend to confound routines—structured repositories of information that regulate production activities and that are highly reproducible—and their effective behavioral expressions, which arise

from the interaction of routines with the environment. In biophysics, the processes linking genotypes (routines, in our terms) to phenotypes (organizational form, in our terms) is called *development*, and it plays a crucial role in the conversion of random mutation into systematic innovation. The evolutionary trajectories of industries and organizational populations at the same time depend on—and affect—organizational development. Reaching a detailed understanding of the feedback structures that regulate processes of evolutionary development (evo-devo) is a crucial task for contemporary evolutionary theories. It is, perhaps, the final test for the relevance of evolutionary interpretations to the world of social and economic organization.

—Alessandro Lomi and Maurizio Zollo

See also Organizational Change; Organizational Ecology; Organizational Environments; Organizational Learning; Organizational Routines

Further Readings

- Aldrich, H., & Ruef, M. (2006). *Organizations evolving*. London: Sage.
- Breiger, R. L. (2002). Poststructuralism in organizational studies. In M. Lounsbury & M. J. Ventresca (Eds.), *Research in the sociology of organizations: Vol. 19. Social structure and organizations revisited* (pp. 295–308). Oxford, UK: Elsevier.
- Campbell, D. T. (1969). Variation and selective retention in socio-cultural evolution. *General Systems*, 14, 69–85.
- Carroll, G. R., & Harrison, J. R. (1993). Evolution among competing organizational forms. *World Futures: The Journal of General Evolution*, 37, 91–110.
- Cohen, M., Burkhart, R., Dosi, G., & Egidi, M. (1996). Routines and other recurring action patterns of organizations: Contemporary research issues. *Industrial & Corporate Change*, 5, 653–698.
- Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Englewood Cliffs, NJ: Prentice Hall.
- Dobbin, F., & Dowd, T. J. (1997). How policy shapes competition: Early railroad foundings in Massachusetts. *Administrative Science Quarterly*, 42, 510–529.
- Dosi, G., Nelson, R., & Winter, S. (Eds.). (2000). *The nature and dynamics of organizational capabilities*. New York: Oxford University Press.
- Fontana, W. (2002). Modelling “evo-devo” with RNA. *Bioessays*, 24, 1164–1177.

- Gavetti, G., & Levinthal, D. (2000). Looking forward and looking backward: Cognitive and experiential search. *Administrative Science Quarterly*, 45, 113–137.
- Gould, S. J. (2002). *The structure of evolutionary theory*. Cambridge, MA: Belknap Press.
- Greve, H. R. (1998). Performance, aspirations and risky organizational change. *Administrative Science Quarterly*, 43, 58–86.
- Hannan, M., & Freeman, J. (1989). *Organizational ecology*. Cambridge, MA: Harvard University Press.
- Hannan, M. T., & Freeman, J. (1984). Structural inertia and organizational change. *American Journal of Sociology*, 49, 149–164.
- Holland, J. J. (1975). *Adaptation in natural and artificial systems*. Ann Arbor: University of Michigan Press.
- Levinthal, D. (1997). Adaptation on rugged landscapes. *Management Science*, 43, 934–950.
- Levitt, B., & March, J. G. (1988). Organizational learning. *Annual Review of Sociology*, 14, 319–340.
- Lindblom, C. E. (1959). The science of “muddling through.” *Public Administration Review*, 19, 79–88.
- Lomi, A., Larsen, E. R., & Freeman, J. (2005). Things change: Dynamic resource constraints and system-dependent selection in the evolution of organizational populations. *Management Science*, 51, 882–903.
- Malerba, F., Nelson, R., Orsenigo, L., & Winter, S. (1999). History friendly models of industry evolution: The computer industry. *Industrial & Corporate Change*, 1, 3–41.
- March, J., & Levinthal, D. (1993). The myopia of learning. *Strategic Management Journal*, 14, 95–112.
- March, J., & Olsen, J. (1989). *Rediscovering institutions: The organizational basis of politics*. New York: Free Press.
- Maynard Smith, J., Burian, R., Kauffman, S., Alberch, P., Campbell, J., Goodwin, B., et al. (1985). Developmental constraints and evolution. *Quarterly Review of Biology*, 60, 265–287.
- McKendrick, D. G., Jaffee, J., Carroll, G. R., & Khessina, O. M. (2003). In the bud? Analysis of disk array producers as a (possibly) emergent organizational form. *Administrative Science Quarterly*, 48, 60–93.
- Nelson, R., & Sampat, B. (2001). Making sense of institutions as a factor in economic growth. *Journal of Economic Organization & Behavior*, 44, 31–54.
- Nelson, R., & Winter, S. (2002). Evolutionary theorizing in economics. *Journal of Economic Perspectives*, 16(2), 23–46.
- Nelson, R., & Winter, S. (1982). *An evolutionary theory of economic change*. Cambridge, MA: Harvard University Press.
- Ruef, M. (2000). The emergence of organizational forms: A community ecology approach. *American Journal of Sociology*, 106, 658–714.
- Scott, W. R., & Meyer, W. J. (1983). The organization of societal sectors. In J. W. Meyer & W. R. Scott (Eds.), *Organizational environments: Ritual and rationality* (pp. 129–153). Beverly Hills, CA: Sage.
- Szulanski, G., & Winter, S. (2002). Getting it right the second time. *Harvard Business Review*, 80, 62–69.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18, 509–533.
- Tushman, M., & Nelson, R. (1990). Introduction: Technology, organizations and innovation. *Administrative Science Quarterly*, 35, 1–8.
- Warglien, M. (2002). Intraorganizational evolution. In J. A. C. Baum (Ed.), *Blackwell companion to organizations* (pp. 98–118). Oxford, UK: Blackwell.
- Zollo, M., & Winter, S. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13, 339–351.

ORGANIZATIONAL EXISTENTIALISM

The field of organizational existentialism (OE) attempts to address four existential issues not often integrated into organizational studies: death, solitude, responsibility, and meaning. Further, OE attempts to integrate two levels of analysis: the individual and the organizational. In this way, OE focuses on how these four basic issues affect the life, health, and behaviors of individuals at work and how these four issues shape the identity and strategies of organizations. One of the core assumptions of OE is that acknowledgment and development of these issues improves human and organizational conditions.

Conceptual Overview

OE is not grounded only in the views of Jean-Paul Sartre, which is a common misconception. Existentialism, as a way to view life and human action or as general mood as opposed to a philosophy, has very ancient and diverse roots. They include Heraclitus of Ephesus in the West and Zarathustra in the East. Table I shows some of the authors who have made a significant contribution to the existential tradition.

But speaking of an existential tradition can be misleading. The *existential movement* can be described as a revolt against confined schools of thoughts and

- Mangham, I., & Overington, M. (1987). *Organizations as theatre: A social psychology of dramatic appearances*. London: Wiley.
- Manham, I. (2005). Vita contemplativa: The drama of organizational life. *Organization Studies*, 26, 941–958.
- Roach, J. R. (1985). *The player's passion: Studies in the science of acting*. Newark: University of Delaware Press.
- Turner, V. (1974). *Dramas, fields, and metaphors: Symbolic action in human society*. Ithaca, NY: Cornell University Press.

DYNAMIC CAPABILITIES

Dynamic capabilities (DC) refers to the capacity of an organization to adapt its competencies to the requirements of its competitive environment. As such, they are considered a fundamental factor in the development of sustainable competitive advantage, particularly in highly dynamic markets.

The actual definition of the construct has been the subject of debate among scholars in both organization theory and strategic management. The first definition proposed by David Teece, Gary Pisano, and Amy Shuen in 1997 identifies dynamic capabilities in "the firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments." A different conceptualization was then brought forth by Kathleen Eisenhardt and Jeffrey Martin in 2000, who focus on the unstructured, experiential, and improvisational nature of these types of competencies in highly turbulent environments. Finally, Maurizio Zollo and Sidney Winter bring forth in 2002 a critique of the previous conceptualizations and define a dynamic capability as "a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness." The key elements of this approach lie in the stability and replicability of the action pattern, as well as in the identification of operating routines as the objects of manipulation. It thus distinguishes it from ad hoc problem solving, especially of an improvisational nature, and avoids any reference to environmental dynamism as a requirement for the conceptualization of dynamic capabilities. It also limits the requirement

of performance enhancement to the simple "pursuit of improved effectiveness," thereby avoiding the well-known logical circularities that have plagued many discussions about organizational capabilities.

Examples of dynamic capabilities include process research and development (specific routines set in place to adapt manufacturing or operating routines, e.g., total quality management processes), reorganization or restructuring routines (aimed at the adaptation of structures, incentives, and processes in the divisions and at the corporate level), and post-acquisition integration capabilities (since they aim to change and align processes in the acquired as well as the acquiring organizations).

Conceptual Overview

The theory on dynamic capabilities is at an early stage, in the sense that it has yet to move significantly beyond the debate on the definition of its key construct. There is broad agreement essentially only on the role dynamic capabilities play in explaining organizational adaptation and, potentially, sustained success. There is also general agreement about the fact that their impact on organizational effectiveness is expected to grow with increasing levels of environmental dynamism, although no simulated or empirical evidence has been brought forth to support this claim.

The origins of the concept lie in the quest for the roots of competitive advantage set out by scholars in the resource-based view of the firm (Jay Barney, Birger Wernerfelt, Ingemar Dierickx, Karel Cool, Richard Rumelt). Their central claim, that only scarce, nonsubstitutable, and inimitable resources can sustain the development of competitive advantage, applies particularly well to immaterial resources, including organizational capabilities. This, however, begs the question, how do capabilities develop? The concept of absorptive capacity was introduced by Wesley Cohen and Daniel Levinthal as one explanation, focusing on the role of the stock of experience accumulated. Dynamic capabilities are proposed as a second type of generative mechanism, pointing to the presence of different types of capabilities specializing in the evaluation and adaptation of operating processes.

But proceeding along this route produces a similar question: How do dynamic capabilities develop? Zollo and Winter suggest that they do so through the combined influence of three mechanisms (in order of increasing levels of intentionality): (1) experience accumulation, (2) knowledge articulation, and (3) knowledge codification.

Furthermore, the relative effectiveness of these mechanisms underlying the evolution of dynamic capabilities has been examined by Zollo and Winter with the moderating effects of task features. For example, task frequency is argued to enhance the relative effectiveness of experience accumulation vis-à-vis the other mechanisms, whereas task heterogeneity and causal ambiguity strengthen the relative effectiveness of the high intentionality mechanisms (knowledge articulation and codification), compared to experience accumulation. Empirical evidence to back up some of these claims has been found by Harbir Singh and Zollo in the context of post-acquisition integration capabilities, and by Prashant Kale in the management of strategic alliance processes.

Another important contingency, the degree of dynamism in the competitive environment, has been analyzed by Eisenhardt and Martin with the main view, however, to qualify the nature of these types of capabilities, rather than to theorize about the boundary conditions to their effectiveness.

Critical Commentary and Future Directions

A theory of dynamic capabilities necessarily requires clarity not only on the nature of the object of study, but also on the antecedents, the consequences, and the interdependencies with other covariates in the explanation of the consequences. The first pending issue, however, remains the achievement of general agreement on the conceptualization of dynamic capabilities. The various approaches vary significantly along the dimension of the required structuration (e.g., stability, replicability, formalization). At one extreme, Winter and Zollo propose a high level of structuration and are prepared to accept a reduced efficacy (and even a negative impact on performance) of dynamic

capabilities in the context of particularly turbulent environments. At the other extreme, Eisenhardt and Martin try to adapt the conceptualization of dynamic capabilities to the characteristics of the environment in order to preserve their effectiveness under any environmental condition.

Assuming convergence on the nature of the concept, future work will need to identify the factors that explain the emergence of this specific type of capabilities. Why do certain firms develop a dynamic capability in a given domain whereas others do not? Is the intentionality of the efforts to set up these new routines a necessary condition to their emergence, and to their effectiveness? Is even the consciousness of their existence a necessary condition for their emergence and for their efficacy? That is, should the firm be aware of being able to adapt a certain kind of operating routine in order to reap the maximum benefits from its deployment? What if dynamic capabilities arose from institutional pressures, industry norms, or simply imitative behavior? Would that reduce their effectiveness?

More generally, a theory of the conditions under which dynamic capabilities can contribute to the development of sustainable competitive advantage still awaits scholarly work. As of today, the positive influence of dynamic capabilities is assumed to exist on the basis of logical discourse and despite the lack of any rigorous control of internal consistencies through, for example, simulated evidence, as well as of substantial, replicated, empirical evidence. Of particular interest are the organizational conditions at work in explaining why firms engaging in the same type of activity that presupposes the presence of a dynamic capability, such as checking and adapting the manufacturing process, produce sometimes very different performance outcomes. The interdependencies with other possible covariates at the firm level (e.g., the ability to manage internal knowledge flows, motivational factors, and structural arrangements) and at the environmental level (e.g., degree of dynamism, industry norms) are still only broadly unknown.

Although the road ahead in developing and testing a theory of dynamic capabilities appears to be long and

poorly lit, the rewards in terms of our understanding of fundamental questions, such as the processes through which organizations adapt to the requirements of their environment and achieve/maintain superior performance, seem also undeniably high.

—Maurizio Zollo and Alessandro Lomi

See also Absorptive Capacity; Competitive Advantage; Organizational Capabilities; Organizational Evolution; Organizational Learning

Further Readings

- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35, 128–152.
- Eisenhardt, K. M., & Martin, J. A. (2000, October/November). Dynamic capabilities: What are they? *Strategic Management Journal*, 21, 1105–1121.
- Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M., Singh, H., Teece, D., et al. (2006). *Dynamic capabilities: Understanding strategic change in organizations*. Oxford, UK: Blackwell.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(8), 509–533.
- Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, 24(10), 991–995.
- Zollo, M., & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science* 13(3), 339–351.
- Zott, C. (2003). Dynamic capabilities and the emergence of intraindustry differential firm performance: Insights from a simulation study. *Strategic Management Journal*, 24, 97–125.

