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COMMENTARY

Dynamic Capabilities: Routines versus Entrepreneurial Action

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INTRODUCTION

I focus this short note on the role of individual executives in the dynamic capabilities framework. Unlike ordinary capabilities, certain dynamic capabilities may be based on the skills and knowledge of one or a few executives rather than on organizational routines.

The thesis advanced here is that, in both large and small enterprises, entrepreneurial (managerial) capitalism is required to establish and sustain superior financial performance. This entrepreneurial management involves not merely the practice and improvement of existing routines or even the creation of new ones. In dynamically competitive enterprises, there is also a critical role for the entrepreneurial manager in both transforming the enterprise and shaping the ecosystem through *sui generis* strategic acts that neither stem from routines (or algorithms) nor need give rise to new routines.

DYNAMIC CAPABILITIES

Dynamic capabilities are higher-level competences that determine the firm's ability to integrate, build, and reconfigure internal and external resources/competences to address, and possibly shape, rapidly changing business environments (Teece, 2007, 2010; Teece et al., 1990, 1997). They determine the speed at, and degree to which, the firm's particular resources can be aligned and realigned to match the requirements and opportunities of the business environment so as to generate sustained abnormal (positive) returns. The alignment of resources both inside and outside the firm includes assessing when and how the enterprise ought to form alliances with other organizations.

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Dynamic capabilities have grown in importance as the expansion of trade has led to both greater specialization and more rapid competitive responses. To make the global system of vertical specialization and cospecialization work, there is an enhanced need for the business enterprise to develop and maintain asset alignment capabilities that enable collaborating firms to combine assets so as to deliver value to customers.

Dynamic capabilities can usefully be thought of as falling into three clusters of activities and adjustments: (1) identification and assessment of an opportunity (*sensing*); (2) mobilization of resources to address an opportunity and to capture value from doing so (*seizing*); and (3) continued renewal (*transforming*). These activities must be performed expertly if the firm is to sustain itself as markets and technologies change, although some firms will be stronger than others in performing some or all of these tasks.

Dynamic capabilities are 'strategic' and distinct from ordinary capabilities. Firms can maintain and extend competitive advantage by layering dynamic capabilities on top of ordinary capabilities.

A firm's ordinary capabilities, if well honed, enable it to perform efficiently its current activities. However, dynamic capabilities, when combined with a good strategy (Rumelt, 2011), enable the enterprise to position itself for making the right products and targeting the right markets to address the consumer needs and the technological and competitive opportunities of the future. Dynamic capabilities help the organization (especially its top management) to develop conjectures, to validate or reject them, and to realign assets as required.

Strong dynamic capabilities are critical to success, especially when an innovating firm needs to pioneer a market, or a new product category. Dynamic capabilities, particularly those resting on entrepreneurial competences, are important to the market creating (and co-creating) processes associated with capitalist economic systems.[1]

ROUTINES, CAPABILITIES, AND IDIOSYNCRATIC ACTION

Ordinary capabilities are perhaps rooted more firmly in routines than are dynamic capabilities. A routine is a repeated action sequence, which may have its roots in algorithms and heuristics about how the enterprise is to get things done. Organizational routines, including those related to organizational transformation, transcend the individuals involved, although the routines can, for some purposes, be usefully studied as developed and embedded in the minds of multiple employees (see, e.g. Miller et al., 2012).

Capabilities change over time. Although most underlying routines tend towards stability/inertia, they can, under conditions of moderate turbulence in the environment, adapt, as suggested by the model of Pentland et al. (2012).

Capabilities are built not just on individual skills but also on the collective learning derived from how employees have worked together, as well as on special equipment or facilities to which the firm has access. The longer an organization has been around, and the larger it is, the less its capabilities depend on particular individuals. The risk of extreme dependence on founders usually dissipates after 5 to 10 years, the length of time being a function of the industry and the particulars of the business.

The literature has identified a plethora of particular routines that constitute the underpinnings and microfoundations of capabilities. For instance, Eisenhardt and Martin (2000) identify cross-functional R&D teams, new product development routines, quality control routines, technology transfer and/or knowledge transfer routines, and certain performance measurement systems as important elements of dynamic capabilities.

Winter (2003) approaches dynamic capabilities as being rooted in higher level change routines that require investment and must be maintained. He differentiates dynamic capabilities from ad hoc problem solving, but this may sometimes be a false dichotomy.

Teece (2007) identifies a comprehensive portfolio of microfoundations (building blocks) for dynamic capabilities that include change routines (e.g. product development along a known trajectory) and analytical methodologies (e.g. investment choices). Fast-moving competitive environments require continuously modifying, and, if necessary, completely revamping what the enterprise is doing so as to maintain a good fit with (and sometimes to transform) the ecosystem that the enterprise occupies.

Responding to – or instigating – change in the business environment involves diagnosing the structure of any new challenges and then choosing an overall guiding policy that builds on the firm's existing competitive advantage (see Rumelt, 2011). The dynamic capabilities that make it possible to succeed in this endeavour involve good strategizing as well as good execution. Creative managerial and entrepreneurial acts (e.g. creating new markets) are, by their nature, strategic and non-routine, even though there may be underlying principles that guide the choices.

Enterprise-level dynamic capabilities, in other words, consist of more than an aggregation of routines. Routines identify how projects are run, but not necessarily how projects are identified, prioritized, and selected. For example, strategizing and asset orchestration (identifying complementarities, buying or building missing assets and then aligning them) can only be routinized in a limited sense. Many strategic actions and transformations require actions that one may never replicate.

Although some elements of dynamic capabilities may be embedded in the organization, the capability for evaluating and prescribing changes to the configuration of assets (both within and external to the organization) rests on the shoulders of top management.[2] It is not by accident that, in the marketplace for professional services, there are turnaround CEOs and other turnaround specialists. This reflects either that some companies have failed to build change routines, or perhaps that these capacities lie outside the organization because they are perceived as being needed only occasionally. It is impossible (or prohibitively expensive) to keep full-scale transformational capacities resident inside the organization. There are almost no studies of which this author is aware directly on this topic, which makes it an obvious candidate for future research.

As noted, it is often extremely difficult, if not impossible, to routinize change beyond recognizing shared principles that should be adhered to in order to deal with it. Any routines underlying the enterprise's dynamic capabilities need to be tied to real-time knowledge creation and general enough to avoid overly focusing managerial attention on the lessons of the past (Eisenhardt and Martin, 2000). Even in less volatile settings, rules and procedures are likely to require constant revamping if superior performance is to be

sustained. It is often difficult to routinize such activities partially, let alone in their entirety.

The thesis here is that top management's entrepreneurial and leadership skills around sensing, seizing, and transforming are required to sustain dynamic capabilities. Put differently, an important managerial function – perhaps the most important – is to achieve semi-continuous asset orchestration and renewal, including the redesign of routines. Periodic, if not continuous, asset orchestration (i.e. asset alignment, coalignment, realignment, and redeployment) is necessary to minimize internal conflict and to maximize complementarities inside and outside the enterprise.

The entrepreneurial management required for a business to possess dynamic capabilities is different but related to other managerial activity. Entrepreneurship is about sensing and understanding opportunities, getting things started, and finding new and better ways of putting things together. It is about creatively coordinating the assembly of disparate and usually cospecialized elements. Entrepreneurial management has little to do with standardized analysis and optimization. It is more about figuring out the next big opportunity or challenge and how to address it – rather than maintaining and refining existing procedures.

We have come to associate entrepreneurship with the individual who starts a new business that provides a new or improved product or service. However, it is important to recognize that the entrepreneurial management function embedded in dynamic capabilities is not confined to start-up activities and to individual actors. It is associated with a new hybrid: entrepreneurial managerial capitalism.

Entrepreneurial managerial capitalism involves calibrating opportunities and diagnosing threats, directing (and redirecting) resources according to a policy or plan of action, and possibly also reshaping organizational structures and systems so that they create and address technological opportunities and competitive threats. Argote and Ren (2012) show how this transformational capability resides in part on an organization's existing transactive memory systems and, presumably, other social relations within the organization, as advocated by Hodgson (2012).

THE RELEVANCE OF CORPORATE HISTORIES

The study of individual corporate histories is an avenue for research and, in particular, for understanding the origins of capabilities and for assessing evidence on whether higher-level dynamic capabilities can usefully be thought of as being rooted in routines. Apple is a case in point.

At Apple, former CEO Steve Jobs was legendary for driving his engineers to high achievement (Kahney, 2008). Jobs' presence has been seen as critical to the success of Apple. Epochs when he was present can be compared with those when he was absent (providing a degree of controlled or natural experiment). His great importance to the enterprise is consistent with Apple's declining performance after he was ousted as CEO in 1985, and with the firm's stellar performance since his return in 1997. Under his leadership, Apple was transformed from a computer company called Apple Computer to a personal computer, mobile communications, and media distribution company, now called simply Apple.

Jobs took a deep personal role in innovation at Apple. In an interview (Burrows, 2004) about product development at Apple, Jobs described it as a mixture of creativity and routines:

> . . . there is no system. That doesn't mean we don't have process. Apple is a very disciplined company, and we have great processes. But that's not what it's about. Process makes you more efficient. But innovation comes from people meeting up in the hallways or calling each other at 10:30 at night with a new idea, or because they realized something that shoots holes in how we've been thinking about a problem. It's ad hoc meetings of six people called by someone who thinks he has figured out the coolest new thing ever and who wants to know what other people think of his idea. And it comes from saying no to 1000 things to make sure we don't get on the wrong track or try to do too much. We're always thinking about new markets we could enter, but it's only by saying no that you can concentrate on the things that are really important.

Jobs' description succinctly illustrates the theories advanced here. He seemed to say that, while Apple's ordinary capabilities are based in processes, its product development is several parts routine but at least one part 'something else'. The something else is non-routine strategizing and entrepreneurial activity, some of which might appear rather ad hoc. Apple's success appears to have stemmed in part from Jobs' prioritization of possibilities based on his deep understanding of the market and an uncompromising insistence on ease of use and appealing design. This approach can be routinized to some extent (the organization comes to know what Steve likes) but Apple and its customers unquestionably benefited from the touch of a creative and brilliant conceiver of new (categories of) electronics products that appeal to consumers around the world.

As Apple's history suggests, there are, of course, risks in relying on a particular talented individual, especially if those talents don't translate into a set of replicable internal routines. Jobs himself was aware of this. In 2008, before his second medical leave, he established an internal business school in which academics were brought in to prepare cases about how key past decisions, such as the creation of the Apple Store, were reached (Lashinsky, 2011). By having executives teach these cases to the company's managers, Apple's high-level routines and top management processes are propagated among its current and future leaders.

Some individual talents, or 'traits', can, over time, be embedded in corporate culture and organizational routines either formally (Apple University) or by repeated demonstration and communication. In the case of sensing capabilities, for example, the more desirable approach in many cases is to embed scanning and interpretive processes throughout the organization, while providing the necessary feedback channels to top management. This approach will not always be optimal. As shown by Turner and Fern (2012), an established routine can adapt to certain types of contextual change, but can be a source of inertia at other times of turbulence.

Any enterprise will be vulnerable if the sensing, creative, interpretive, and learning functions are left to the cognitive capacities of a few individuals. In a clear example of an endeavour to embed sensing and seizing deep into the organization, IBM has successfully

routinized its selection, evaluation, and exploitation of 'emerging business opportunities' in a process that has resulted in billions of dollars in additional revenue (O'Reilly et al., 2009). Similarly, Cisco has routinized its selection and integration of acquisition targets (Mayer and Kenney, 2004).

Routinized procedures such as those at IBM and Cisco can help management teams to look beyond a narrow search horizon tied to established competences (Levitt and March, 1988). Business history is replete with examples of companies that faced major problems from becoming trapped in their deeply ingrained assumptions, information filters, and problem solving strategies, including General Motors, Digital Equipment, and IBM (in the 1980s) (Henderson, 1994). Their legacy routines and assumptions over time become maladapted. The question is whether (1) they could have had change routines that would have automated their transformation, or (2) their CEOs simply failed at the tasks of diagnosing the challenges and effectuating needed transformation that couldn't reasonably have been routinized.

CONCLUSION

The importance of routines to ordinary capabilities is undisputed. For dynamic capabilities, the respective roles of routines and particular (non-routine) action by top management offers a rich and important area for research. Even though managers are often called on to strategize and to implement change, the manner in which this occurs can hardly be considered entirely routine. Indeed, the existence of an industry of restructuring and change consultants, and of so-called 'transformational CEOs', challenges the notion that all dynamic capabilities can be reduced to firm-specific routines, at least in the manner that some have suggested (e.g. Eisenhardt and Martin, 2000; Feldman and Pentland, 2003; Zollo and Winter, 2002).

Another of the determinants of whether or not the decisions of individual managers and a firm's dynamic capabilities are mediated by 'patterned' routines may be firm size, as suggested by the IBM example above. A smaller firm might lack the organizational and technological slack to repetitively evaluate potential opportunities.

The study of managerial dynamic capabilities is challenging because they are often tied to complex corporate histories. Although managerial dynamic capabilities can to some extent be traced by using large datasets (e.g. Adner and Helfat, 2003), they can best be analysed through in-depth qualitative research (e.g. Danneels, 2011). This empirical literature is still at an early stage and opportunities abound to dig deeper into the linkages between individual or small-group managerial actions, dynamic capabilities, and long-run firm performance. The research paradigm of dynamic capabilities is still relatively new. Accordingly, illuminating case studies – hinted at in the history of Apple since its founding – are likely to yield powerful insights.

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NOTES

[1] The entrepreneurial creation and co-creation of markets is often required to ensure the generation and appropriability of returns from innovation (Pitelis and Teece, 2009). The internet keeps generating a myriad of such requirements every day.

[2] However, governance structures (e.g. the composition of boards of directors) will play an important role in selecting and, to some extent, monitoring top management.

REFERENCES

Adner, R. and Helfat, C. E. (2003). 'Corporate effects and dynamic managerial capabilities'. *Strategic Management Journal*, **24**, 1011–25.

Argote, L. and Ren, Y. (2012). 'Transactive memory systems: a micro foundation of dynamic capabilities'. *Journal of Management Studies*, **49**, 1375–82.

Burrows, P. (2004). 'The seed of Apple's innovation'. *businessweek.com* (12 October). Available at http://www.businessweek.com/print/bwdaily/dnflash/oct2004/nf20041012_4018_db083.htm?chan=gl (accessed 24 March 2010).

Danneels, E. (2011). 'Trying to become a different type of company: dynamic capability at Smith Corona'. *Strategic Management Journal*, **32**, 1–31.

Eisenhardt, K. M. and Martin, J. A. (2000). 'Dynamic capabilities: what are they?'. *Strategic Management Journal*, **21**, 1105–21.

Feldman, M. S. and Pentland, B. T. (2003). 'Reconceptualizing organizational routines as a source of flexibility and change'. *Administrative Science Quarterly*, **48**, 94–118.

Henderson, R. M. (1994). 'Managing innovation in the information age'. *Harvard Business Review*, **72**, 100–6.

Hodgson, G. M. (2012). 'The mirage of microfoundations'. *Journal of Management Studies*, **49**, 1389–95.

Kahney, L. (2008). *Inside Steve's Brain*. New York: Portfolio.

Lashinsky, A. (2011). 'How Apple works: inside the world's biggest startup'. *Fortune* (online date 25 August). Available at http://tech.fortune.cnn.com/2011/08/25/how-apple-works-inside-the-worlds-biggest-startup/ (accessed 24 December 2011).

Levitt, B. and March, J. G. (1988). 'Organizational learning'. *Annual Review of Sociology*, **14**, 319–40.

Mayer, D. and Kenney, M. (2004). 'Economic action does not take place in a vacuum: understanding Cisco's acquisition and development strategy'. *Industry and Innovation*, **11**, 299–325.

Miller, K. D., Pentland, B. T. and Choi, S. (2012). 'Dynamics of performing and remembering organizational routines'. *Journal of Management Studies*, **49**, 1536–58.

O'Reilly, C. A., Harreld, J. B. and Tushman, M. L. (2009). 'Organizational ambidexterity: IBM and emerging business opportunities'. *California Management Review*, **51**, 75–99.

Pentland, B. T., Feldman, M. S., Becker, M. C. and Liu, P. (2012). 'Dynamics of organizational routines: A generative model'. *Journal of Management Studies*, **49**, 1484–508.

Pitelis, C. N. and Teece, D. J. (2009). 'The (new) nature and essence of the firm'. *European Management Review*, **6**, 5–15.

Rumelt, R. P. (2011). *Good Strategy, Bad Strategy: The Difference and Why it Matters*. New York: Crown Business.

Teece, D. J. (2007). 'Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance'. *Strategic Management Journal*, **28**, 1319–50.

Teece, D. J. (2010). 'Technological innovation and the theory of the firm: the role of enterprise-level knowledge, complementarities, and (dynamic) capabilities'. In Rosenberg, N. and Hall, B. (Eds), *Handbook of the Economics of Innovation*, Vol. 1. Amsterdam: North-Holland 1, 679–730.

Teece, D. J., Pisano, G. and Shuen, A. (1990). 'Firm capabilities, resources, and the concept of strategy'. Center for Research in Management. University of California, Berkeley, CCC Working Paper 90-8.

Teece, D. J., Pisano, G. and Shuen, A. (1997). 'Dynamic capabilities and strategic management'. *Strategic Management Journal*, **18**, 509–33.

Turner, S. F. and Fern, M. J. (2012). 'Examining the stability and variability of routine performances: the effects of experience and context change'. *Journal of Management Studies*, **49**, 1407–34.

Winter, S. G. (2003). 'Understanding dynamic capabilities'. *Strategic Management Journal*, **24**, 991–5.

Zollo, M. and Winter, S. G. (2002). 'Deliberate learning and the evolution of dynamic capabilities'. *Organization Science*, **13**, 339–51.