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## **DYNAMIC CAPABILITIES IN THE DOCK:**

### **A CASE OF REIFICATION?**

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## **DYNAMIC CAPABILITIES IN THE DOCK: A CASE OF REIFICATION?**

In his award-winning SO!APBOX essay, Donald Hambrick observed that the strategic management field “is rapidly being pulled apart by centrifugal forces. Like a supernova that once packed a wallop, our energy is now dissipating and we are quickly growing cold” (2004: 91), and included dynamic capabilities as one of the constructs that appeared to be most detrimental to the field’s stability. At first sight, as scholars interested in dynamic capabilities, we conceded that Hambrick appeared to be right. Navigating the literature we encountered a plethora of dynamic capability definitions, countless number of capability types (e.g. R&D, marketing, etc.) labelled as ‘dynamic’ and a variety of formulaic expressions under the generic umbrella of ‘to adapt and change firms need dynamic capabilities’. Yet, after nearly two decades, a rising number of over 100 articles, special issues and conference presentations (Di Stefano, Peteraf and Verona, 2010) seem to suggest that dynamic capabilities were, instead, one of the centripetal forces that helped keep the field together. So we were faced with a puzzle: were dynamic capabilities the last flash of the dying supernova, or could they rather save strategic management from its anticipated self-destruction?

More recently, dynamic capability research appears to have become an academic conversation polarized between equally passionate critics and supporters. Perhaps a paramount example is the exchange between Arend and Bromiley (A&B) and Helfat and Peteraf (H&P) on the future of dynamic capabilities published in *Strategic Organization* in 2009: whereas A&B suggested that the dynamic capability construct should be abandoned due to its weak theoretical foundations and inconsistencies, H&P called for further developmental efforts given the infancy of the field and its growing relevance. Not

surprisingly, this paradigmatic match between advocates of rigor and defendants of relevance (Hirsch and Levin, 1999<sup>1</sup>) has regularly appeared in Strategic Organization's<sup>2</sup> 'Most-Read' rankings, together with Hambrick's (2004) call for the consolidation of strategic management. How to solve this dilemma, then: should we discard dynamic capabilities or persist with them?

In the face of the possibility of either the demise of strategic management (Hambrick, 2004) or the discovery of its "Holy Grail" (H&P, 2009: 99), we decided to let the evidence speak for itself. In this essay, we intervene in the debate between A&B and H&P to propose that a specific developmental process of conceptual and empirical work might explain their different assessment of dynamic capabilities. A remarkable number<sup>3</sup> of prior reviews on dynamic capabilities have focused on conceptual inconsistencies and contradictions (e.g. Barreto, 2010), but have not taken fully into account the effects of a process which often leads researchers to cease "to specify the assumptions that underlie the concept or construct and treat it like a general-purpose solution to an increasing range of problems" (Lane, Koka and Pathak, 2006: 835). Labelling this process 'reification', Lane et al. (2006) developed a rigorous assessment methodology based on the analysis of a construct's usage by and within its research community.

In what follows, we investigate the reification of dynamic capabilities by systematically considering the evidence from an extensive sample of 578 articles published in 132 journals from 1997 to 2009. We argue that understanding reification is critical, since it represents the underlying process that makes the construct both particularly attractive and profoundly divisive at the same time. This assessment is therefore of special importance in strategic management, a field plagued by "parochialism and disjointedness" (Hambrick, 2004: 97) and by "pressures to jump on emerging research bandwagons, to publish quickly, and to avoid replication" (Lane et al.: 859). We start by using Lane et al.'s (2006) methodology, via which

we corroborate A&B's characterization of the state of dynamic capabilities. We next discuss the unfolding of the reification process, confirming H&P's recognition that the construct's development path is far from complete, and that there are promising early signs of consolidation. We then build on our findings to offer actionable indications for reconciling the divergent views and producing "cumulative, valid, and useful" knowledge (Lane et al., 2006: 859) about dynamic capabilities. We conclude with an important reflection on reification.

### ***Evidence for A&B's view: Dynamic capabilities are reified***

A&B concluded that the dynamic capability construct "serves mainly as a label for an area of study... a label with an implied coherence it does not possess" (2009: 86). Dedicating a substantial amount of time to reviewing whether dynamic capabilities have become a reified (i.e. taken-for-granted) construct, we have relied fully on Lane et al.'s (2006) methodology, assessing reification as being reflected by three concurring indicators: a) the importance of a construct in a paper's core topic; b) the closeness of each paper's usage of a construct to its original conceptualization; and c) the level of cohesion about the construct within the research community.

#### ***a) The importance of dynamic capabilities in each paper***

We first assessed whether the construct was of central importance to each paper's core topic or whether it was simply "a grace note that embellishes a paper without adding substance" (Lane et al., 2006: 834). To define the notion of 'substantial usage', we counted articles in three categories (see Table 1 for our sampling methodology). The first category contains papers where the authors claim, as their central contribution, to extend the theory or definition of dynamic capabilities: examples include Eisenhardt and Martin (2000) and

Winter (2003). In the second, we included papers where the construct was directly incorporated in authors' hypotheses, propositions and/or models, or where it was clearly instrumental in developing them: examples here include Blyler and Coff (2003) and Salvato (2009). We coded the remaining papers into a third category, where dynamic capabilities were used in other substantial ways, embracing such studies as those by Newbert (2007), whose review of the resource-based view formally covered dynamic capabilities, and Nightingale (2008), who discussed the construct within the theme of meta-paradigm change and the theory of the firm. Despite attempting to be very inclusive (see Lane et al., 2006), we nonetheless ended up with only 104 articles that made substantial use of the dynamic capability construct.

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Insert Table 1 about here  
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b) *The closeness to the original conceptualization of dynamic capabilities*

Second, we considered the extent to which prior research built incrementally on the seminal conceptualization of dynamic capabilities. In their widely cited paper<sup>4</sup>, Teece, Pisano and Shuen (1997: 518) proposed three basic components of the dynamic capability construct as a firm's "managerial and organizational processes, shaped by its (specific) asset position, and the paths available to it" (see also A&B, page 79 and H&P, page 96). To verify the extent to which later studies "have sought to make incremental improvements" (H&P, 2009: 94), we compared how our sample's substantial papers built on Teece et al.'s (1997) components. Table 2 summarizes the findings of our two criteria and shows that only the 79 papers (13.6%) in the first seven columns directly discussed processes, paths or positions (or their

synonyms such as routines, trajectories and strengths) in relation to the dynamic capability construct.

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Insert Table 2 about here  
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*c) The cohesion of the dynamic capability research community*

The taken-for-grantedness of a construct reflected by the first two indicators is not sufficient to determine its reification: the third critical determinant is a low degree of cohesion within a research community, with different studies or authors sharing labels but not meanings (Lane et al., 2006). We assessed the degree of cohesion by analysing the citation patterns in our final sample, and by verifying whether the literature presented a strong and interdependent citation network. Put differently, the less tightly interlinked the 104 papers in our final set were, the more the dynamic capability construct's reification would be signalled.

Using two software tools (SITKIS [Schildt, 2006] and UCINET [Borgatti, Everett and Freeman, 2002]), we created a database of the references in the final sample's substantial papers, and then determined how often each paper had cited ('Citations Sent') or been cited by others ('Citations Received') in the sample, and the average annual numbers of such links (Lane et al., 2006). We found that nearly half (51 articles) of the final sample papers had not been cited by any other sample article and that over half (53 articles) produced less than 0.5 average links per year. Overall (excluded review studies) only 16 papers averaged more than 1.0 link per year and the number of citations received (25.1 on average) was significantly higher than citations sent (3.7 on average)<sup>5</sup>.

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Insert Table 3 about here  
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### *Reification's Implications*

It is hard to deny that our reification assessment casts a shadow on the construct's past development. Only a rather limited number of papers used dynamic capabilities in substantial (i.e. non ritual) ways and "the cross-citations between the papers in this body of literature show little evidence of an accumulated body of knowledge" (Lane et al., 2006: 858). Taken together, it appears dynamic capabilities have become a reified construct in strategic management, surely adding grist to A&B's (and Hambrick's) mill.

### *Evidence for H&P's view: Reification is retrenching*

Given this evidence of reification, A&B's suggestion that the construct should be abandoned seems justified. However, H&P argued that "theory concerning dynamic capabilities has had little time to develop... as a field of inquiry, it is still in its infancy" (2009: 92) and claimed to see "strong signals in terms of scholarly interest regarding dynamic capabilities potential" (2009: 99). Whereas the attractiveness of dynamic capabilities is a matter of fact (see Di Stefano et al., 2010), this very attractiveness may carry the risk of confining the construct to the realm of academic fashion (Abrahamson, 1996; Bort and Kieser, 2011; Starbuck, 2009). While H&P's argument that time would rectify the construct's defects seemed compelling, it was supported by little evidence. Probing our data, we found two elements which might imply that the reification of dynamic capabilities was not irreversible.

*a) Evolution of the usage of the dynamic capability construct*

A curious aspect of Lane et al.'s (2006) methodology was the definition of reification as a dynamic process but its assessment as a static outcome, a drawback which they addressed by proposing a thematic analysis and a reconceptualization of their focal construct, i.e. absorptive capacity. Given the nature of the debate on dynamic capabilities, we looked instead at the reification of dynamic capabilities as a process, exploring how it unfolded over time, and found that, far from being unidirectional, it passed through at least four phases (see Figure 1). Crucially for our purposes, this suggests that, at the time of A&B and H&P's debate, a static assessment of past literature would have produced the 'mirage' of a problematic conversation about dynamic capabilities, which was actually the persistent lagged consequence of the earlier excitement about the construct (Hirsch & Levin, 1999). However, a closer look at the diffusion of dynamic capabilities shows that the proportion of substantial contributions had grown significantly by 2009, and had already climbed beyond its worryingly low earlier levels (e.g. Hirsch & Levin, 1999).

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Insert Figure 1 about here  
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*b) The influential role of leading authors in the research community*

The second piece of evidence which concurs with H&P's view is that dynamic capability literature has built a strong and recognized core of several fundamental papers over time. Despite the literature's general lack of cohesion, the construct has been nurtured by many influential scholars, who have helped the community to better understand specific aspects. From those who have focused on routines (e.g. Helfat and Peteraf, 2003; Winter, 2003) to those who have paid attention to path dependence and cognitive boundaries (e.g. Posen and Levinthal, 2012), to mention just a few streams, we can observe successful efforts towards

incrementally specialized research on dynamic capabilities. More specifically (as Figure 2 shows) the collective reputation of such important voices as Eisenhardt and Martin (2000), Zollo and Winter (2002), Helfat and Peteraf (2003) and Winter (2003) has helped shape the diffusion of dynamic capabilities within academic circles (Bort and Kieser, 2011). We found that the cumulative influence of these important contributions, coupled with the appearance of the first published reviews on dynamic capabilities (i.e. Zahra, Sapienza and Davidsson, 2006; Wang and Ahmed, 2007), constituted a retrenchment after 2006, which began to counterbalance the negative effect of reification.

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Insert Figure 2 about here  
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#### *The Implications of Retrenchment*

H&P pointed out that “emerging and evolving theories develop slowly, over long periods of time” (2009: 92), reinforcing this defense in their essay title. But, while devoting much effort to addressing A&B’s conceptual issues, H&P offered little support for their temporal argument. Nonetheless, our close examination of the reification of dynamic capabilities seems to substantiate their claim in two ways. First, we found that ritual use of the construct appears less prominent recently than at earlier stages of its diffusion. Second, in contrast to the lack of cohesion that signals a truly reified construct, the dynamic capability research community recognizes a strong group of intellectual touchstones, and its leading authors have proactively engaged in driving the construct’s consolidation (Hirsch and Levin, 1999). Considering this evidence carefully, it seems that the construct’s reification has retrenched over time, and is now less obviously a reason for abandoning it.

***‘So-What’: At the crossroads between abandonment and persistence***

In our essay, we have investigated the dilemma of a construct, i.e. dynamic capabilities, facing the tension between the search for relevance and the requirement for rigor. We have demonstrated how this tension may be explained by seeing conceptual reification as an unfolding process, and our findings make us lean, albeit cautiously, towards suggesting the construct deserves more focused research, rather than to be prematurely abandoned. We argue that, in the early days of excitement about dynamic capabilities (Hirsch and Levin, 1999), research on the construct suffered from “a scattered pattern of knowledge accumulation” (Lane et al., 2006: 859) which led to its relatively extensive but ritual usage. Increasing perceptions of the detrimental effects of reification led to widespread concerns in the academic community and to early attempts to review the construct (e.g. Zahra et al., 2006; Wang & Ahmed, 2007), culminating in A&B openly throwing down the gauntlet and challenging its very validity (Hirsch and Levin, 1999). At the same time, however, we have found evidence of the dynamic capability construct as becoming consolidated “along a developmental path” (H&P, 2009: 91), and believe that, if their argument had not been grounded in a static picture of past reification phases, A&B might have tempered their overall condemnation.

By shedding light on how the reification process has helped shape the diffusion of dynamic capabilities, we have arguably resolved one dilemma, but opened up another, more significant one. Once a validity challenge starts, its outcome may be quite uncertain. As Hirsch and Levin (2009: 205) suggest, “scholars either make the construct coherent (override of challenges), agree to disagree over its definition (permanent issue), or call for its demise (construct collapse)”. We caution the community that dynamic capabilities are at the crossroads between establishing itself as a robust strategic management theory and being abandoned, just as innumerable fashionable constructs have been in the past (Bort and Kieser,

2011). But A&B's rigorous criticisms cannot just be ignored, as they are important warnings of the potential detrimental effects of reification, such as a loss of significance and theoretical fragmentation. We view the growing number of articles aiming to develop and refine the construct as a promising sign, but nonetheless counsel scholars to pay careful attention when engaging with dynamic capabilities, as they are still affected by many inconsistencies and much confusion. In this respect, we believe dynamic capability research would benefit if authors adopted one or more of three basic safeguards against reification:

1) **Striving for clarity of definition(s)**. First and foremost, avoiding the effects of reification requires definitional clarity, which helps build incremental knowledge and facilitates the establishment of a 'winning path'. In practice, we encourage researchers to state openly and upfront which definition their papers follow and why, and, more importantly, to incorporate specific components of their chosen definition into their proposed theoretical and/or empirical structure. Recent instances of exemplary practice include Danneels (2010), who clearly builds on Eisenhardt and Martin's (2000) work, and Hodgkinson and Healy (2011), who expand on Teece's (2007). Independent of which definition researchers choose, we strongly believe continuous theoretical cherry-picking and mixing sub-elements from competing definitions will be the surest route to the construct's collapse. In addition, given the construct's burgeoning definitional complexity, "perhaps the largest source of confusion" (Cepeda and Vera, 2007: 426), we consider dynamic capability researchers would be well advised to engage in a profound scrutiny of the numerous underlying meanings that have been attached to the construct over time (Suddaby, 2010).

2) **Standing on the shoulders of 'engaged giants'**. With the caveat that the central definition should be transparently selected, we suggest future research would benefit from directly engaging with the foundational core of the dynamic capability construct (see Table 3). In practice, we call for authors (and reviewers) to discuss openly how their work

confirms, extends, refines or challenges the key papers in the field. At worst, by encouraging critical reviews of the core literature, this will reduce the number of ritual contributions; at best, this route can foster the construct's consolidation and substantial incremental refinement. In either case, we suspect the threat of the collapse of the dynamic capability construct becoming a permanent issue will be reduced. At the same time, however, counterbalancing reification pleads for 'engaged giants' (such as those in our Figure 2) to continue their integrative theorizing effort. If it is probably too much to expect dynamic capabilities to develop "like Athena springing forth from Zeus's forehead fully armed" (H&P: 2009: 92), it seems reasonable to demand Zeus to nurture his other children a bit more. Contributions such as Helfat et al.'s (2007) book have clearly showed an impact, but the persistency of reification requires constant attention on how the dynamic capability construct develops.

- 3) **Engaging in empirical research.** Despite the construct's progress, we need much more empirical research on dynamic capabilities. A&B and H&P both placed considerable emphasis on arguing about the empirical support of a discussion which had not yet been fully theorized. Our investigation found excellent pieces of empirical research, but only very few (see Table 2), making it impossible to assess dynamic capability research's empirical support. We maintain that an increase in carefully crafted empirical work would enhance the chances of challenges to the construct's validity being overcome by both strengthening the recognition of dynamic capabilities in academia and supporting its relevance for external practitioners (Hirsch and Levin, 1999). We suspect we need not call for more theoretical contributions: in proportion to other constructs, dynamic capabilities seem to be naturally fruitful in this respect.

### ***Reflections on reification***

The reification of academic constructs poses an intriguing question that goes beyond the dynamic capabilities case and relates to fashions in management research (e.g. Abrahamson, 1996). Bort and Kieser (2011) recently demonstrated that fashionable constructs are predominant and, to a certain extent, unavoidable in organization theory. Building on earlier work by Blumer (1969) and Starbuck (2009), they speculate whether “fashion is negative or positive for the development of science” (Bort and Kieser, 2011: 672), but, sticking to a bird-eye perspective on academic constructs, stop short of localizing the underlying processes which shape fashion-like diffusion.

With signs of faddishness already suggested for such successful strategic management ideas as the resource-based view (Arend, 2006; Newbert, 2007), absorptive capacity (Lane et al., 2006) and dynamic capabilities, as well as for research streams including transaction cost economics (David and Han, 2004) and entrepreneurship (Ogbor, 2000; Aldrich, 2011), we wonder too whether fashions really constitute necessary yet fundamentally detrimental phenomena. More specifically, in this essay we have provided granular evidence that reification may accurately represent a critical process behind academic fashions. So we ask explicitly: *Is reification merely an evil?*

Prior research warns of the damaging impact of reification on the production of valid and cumulative knowledge (Lane et al., 2006), and Arend and Bromiley (2009) have voiced similar concerns in observing that dynamic capabilities may be “susceptible of halo effects [...] [they] may become a talisman” (2009: 83). Yet, noticing that breakthrough ideas often take a long time to develop (e.g. Williamson, 1999), Helfat and Peteraf suggested that “terms that are vague and elastic may offer the advantage of facilitating a more flexible developmental path” (2009: 92). In the same vein, Green (2004) has observed that, when rapid diffusion brings acceptance and taken-for-grantedness, conceptual innovation may

become institutionalized, producing theoretical stability (see also Bort and Kieser, 2011). If reification clearly carries this risk of conceptual fuzziness, it is perhaps time for future research to explore its brighter side more thoughtfully.

### *Postscript*

We do not yet know if dynamic capabilities will ultimately become a fully formed theory or will be abandoned. Irrespective of what eventually happens, it is probably fair to observe at the end of this essay that the construct has not yet extinguished Hambrick's (2004) supernova. Nearly another decade has gone by, and strategic management seems still to be in shape: to date, we can at least argue that the reports of its imminent demise have been greatly exaggerated.

## Notes

- <sup>1</sup> We are grateful to the reviewers for this suggestion.
- <sup>2</sup> Strategic Organization publishes a monthly ranking of its 50 Most-Read Articles based on full-text and pdf views (<http://soq.sagepub.com/reports/most-read>). The articles by Arend and Bromiley (2009), Hambrick (2004) and Helfat and Peteraf (2009) figured constantly in these ranking in 2011 and 2012.
- <sup>3</sup> We are aware of at least eight published reviews focusing specifically on dynamic capabilities, plus a number of others (e.g. Newbert, 2007) which include the construct as part of their assessments of broader themes.
- <sup>4</sup> At the time of our final revision of this essay (April 2012), Teece et al. (1997) had received over 3,000 citations in the ISI Web of Science.
- <sup>5</sup> As a point of reference, Lane et al. (2006) concluded that the absorptive capacity construct had become reified after finding that a) 52% of the papers they considered had not been cited by any other article and that b) 56% of them averaged less than 0.5 citation links per year.

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**Table 1****Sampling methodology (adapted from Lane et al., 2006)**

<b>Step</b>	<b>Action taken</b>	<b>Sample</b>
<b>1</b>	<ul style="list-style-type: none"> <li>• We searched for published journal articles in the ISI Web of Science database for the period 1997-June 2009.</li> <li>• We ensured comprehensiveness by using one single primary keyword (“dynamic capability” OR “dynamic capabilities”) in ‘Title’ OR ‘Topic’.</li> <li>• We read all titles and abstract to exclude articles using dynamic capabilities with unrelated meaning (e.g. as a technical term in engineering).</li> </ul>	<b>642 articles found</b>  <b>- 65 articles eliminated</b>
<b>2</b>	<ul style="list-style-type: none"> <li>• We excluded all the articles from journals that published less than six papers in the timeframe because an average rate of one dynamic capability paper every two years “was the minimum needed to consider the construct a part of the journal’s research domain” (Lane et al., 2006: 839).</li> </ul>	<b>577 articles left</b>  <b>- 188 articles eliminated</b>
<b>3</b>	<ul style="list-style-type: none"> <li>• We downloaded and read all the remaining articles in depth.</li> <li>• We classified each article according to the importance of the dynamic capability construct in the paper’s core topic<sup>(a)</sup>. We used four categories, the first three indicating substantial usage and the last ritual usage: <ol style="list-style-type: none"> <li>1. The paper directly extends the theory or the definition;</li> <li>2. The construct is directly incorporated for theoretical or empirical development;</li> <li>3. The construct is used substantially in other ways (residual category);</li> <li>4. The paper uses the construct in the background or as a minor citation with little or no discussion.</li> </ol> </li> <li>• We excluded the papers classified in the fourth category as not substantially using the construct.</li> </ul>	<b>389 articles left</b>  <b>- 286 articles eliminated</b>
<b>4</b>	<ul style="list-style-type: none"> <li>• We included in the sample one review paper, i.e. Di Stefano et al., 2010, published soon after we run Step 1 by a journal respecting the criterion outlined in Step 2.</li> </ul>	<b>= 104 articles left in final sample</b>

<sup>(a)</sup> In line with Lane et al. (2006), we conducted a conservative assessment of reification. We were thus very inclusive by considering all papers which mentioned our keywords at least once, irrespectively of them referencing any specific prior contributions such as Teece et al. (1997) or Eisenhardt and Martin (2000). It is important to clarify that we did not assess the intrinsic quality of each paper but we only did pay attention to how the construct of dynamic capabilities was used.

**Table 2**

**Analysis of the usage of the dynamic capability construct and its seminal components**

		Number of papers emphasizing each seminal component of the construct										
Total = 578 (a)		All three dimensions	Processes	Positions	Paths	Processes and Positions	Processes and Paths	Positions and Paths	None discussed	Type		
Number of papers for each usage of the construct	Theory or definition directly extended (24 papers; 4.2%)	8	2	0	0	2	2	0	1	15	2.6%	Conceptual
		0	0	0	0	0	0	0	2	2	0.3%	Qualitative
		0	0	0	0	0	0	0	1	1	0.2%	Quantitative
		0	0	0	0	0	0	0	0	0	0.0%	Mixed
		1	0	0	0	0	0	0	0	1	0.2%	Simulation
		2	0	0	0	0	2	0	1	5	0.9%	Review
	Used directly for theoretical or empirical development (70 papers; 12.1%)	3	4	1	0	1	2	1	3	15	2.6%	Conceptual
		3	5	1	0	4	4	0	8	25	4.3%	Qualitative
		0	8	2	0	4	1	0	6	21	3.6%	Quantitative
		2	2	0	0	0	0	0	0	4	0.7%	Mixed
		0	0	1	0	0	0	0	1	2	0.3%	Simulation
		1	1	0	0	0	1	0	0	3	0.5%	Review
	Others, with substantial use (10 papers; 1.7%)	1	2	0	0	0	0	0	1	4	0.7%	Conceptual
		0	0	0	0	1	0	0	0	1	0.2%	Qualitative
		0	0	0	0	1	0	0	0	1	0.2%	Quantitative
		0	0	0	0	0	0	0	0	0	0.0%	Mixed
		0	0	0	0	0	0	0	0	0	0.0%	Simulation
		0	1	1	0	1	0	0	1	4	0.7%	Review
<b>Total</b>	21	25	6	0	14	12	1	25	104	18.0%		
	3.6%	4.3%	1.0%	0.0%	2.4%	2.1%	0.2%	4.3%				

(a) Total = 642 articles found – 65 articles eliminated because clearly irrelevant + 1 sample review paper added = 578 (see Table 1).

**Table 3****The most central and substantial papers in the dynamic capability literature<sup>(a)</sup>**

Rank	Author(s)	Year	Title	Journal	Citations Received	Citations Sent	Average Links per Year <sup>(b)</sup>
1	Teece, D. J., Pisano, G., & Shuen, A.	1997	Dynamic capabilities and strategic management	Strategic Management Journal	99	0	8.3
2	Eisenhardt, K. M., & Martin, J. A.	2000	Dynamic capabilities: What are they?	Strategic Management Journal	79	2	6.8
3	Zollo, M., & Winter, S. G.	2002	Deliberate learning and the evolution of dynamic capabilities	Organization Science	44	2	3.8
4	Winter, S. G.	2003	Understanding dynamic capabilities	Strategic Management Journal	33	3	3.0
5	Helfat, C. E., & Peteraf, M. A.	2003	The dynamic resource-based view: Capability lifecycles	Strategic Management Journal	32	4	3.0
6	Makadok, R.	2001	Toward a synthesis of the resource-based and dynamic-capability views of rent creation	Strategic Management Journal	21	1	1.8
7	Helfat, C. E.	1997	Know-how and asset complementarity and dynamic capability accumulation: The case of R&D	Strategic Management Journal	18	0	1.5
8	Zott, C.	2003	Dynamic capabilities and the emergence of intraindustry differential firm performance: Insights from a simulation study	Strategic Management Journal	15	3	1.5
9	Teece, D. J.	2007	Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance	Strategic Management Journal	11	5	1.3
10	Adner, R., & Helfat, C. E.	2003	Corporate effects and dynamic managerial capabilities	Strategic Management Journal	12	2	1.2
10	Benner, M. J., & Tushman, M. L.	2003	Exploitation, exploration, and process management: The productivity dilemma revisited	Academy of Management Review	12	2	1.2
12	Danneels, E.	2002	The dynamics of product innovation and firm competences	Strategic Management Journal	10	2	1.0
13	Lavie, D.	2006	Capability reconfiguration: An analysis of incumbent responses to technological change	Academy of Management Review	8	4	1.0
14	Schreyoegg, G., & Kliesch-Eberl, M.	2007	How dynamic can organizational capabilities be? Towards a dual-process model of capability dynamization	Strategic Management Journal	5	7	1.0
15	Ambrosini, V., Bowman, C., & Collier, N.	2009	Dynamic Capabilities: An Exploration of How Firms Renew their Resource Base	British Journal of Management	1	11	1.0
15	Easterby-Smith, M., & Prieto, I. M.	2008	Dynamic capabilities and knowledge management: an integrative role for learning?	British Journal of Management	1	11	1.0
<b>Average</b>					<b>25.1</b>	<b>3.7</b>	<b>2.4</b>

<sup>(a)</sup> The table is based on the final sample of 104 papers making substantive usage of the construct. We included only papers with at least one average link per year to other papers in the final sample. Review papers are not included in the table.

<sup>(b)</sup> Average Links per Year = (Citations Received + Citations Sent) / 12 years.

Figure 1

The diffusion of the dynamic capability construct and reification phases

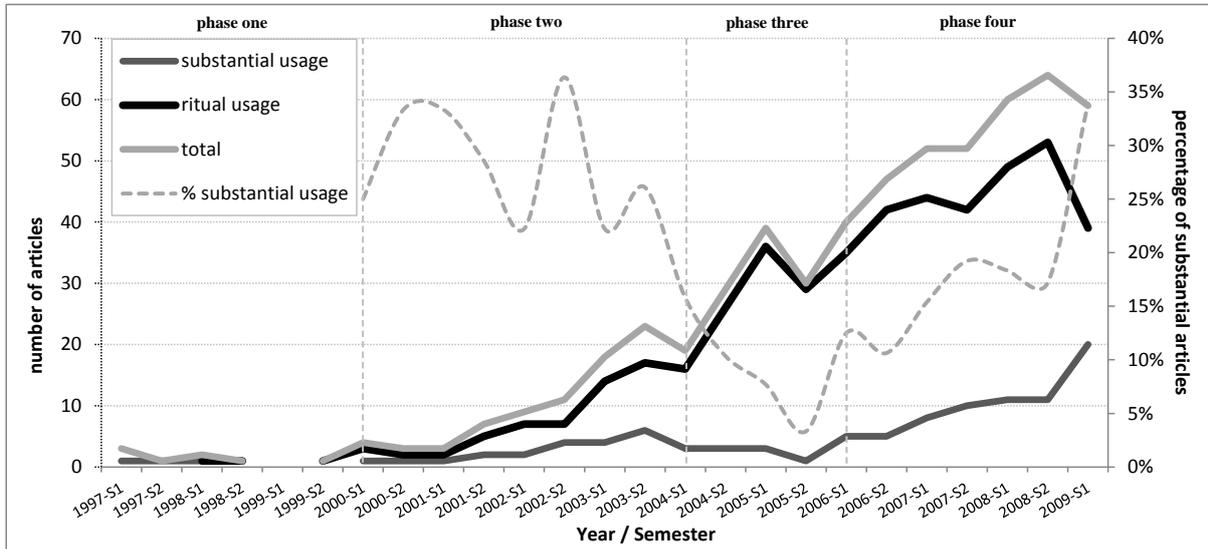
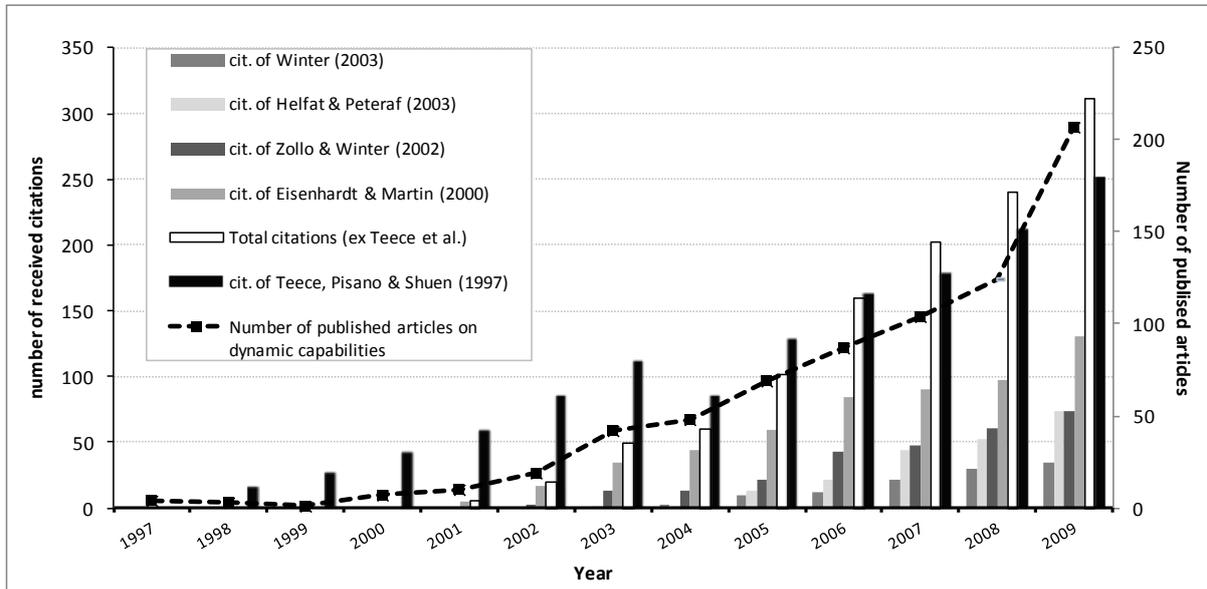


Figure 2

The role of influential authors in diffusing the dynamic capability construct



## **Author biographies**

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