BACK TO THE FUTURE? A COMPARATIVE REVIEW OF THE RESOURCE-, CAPABILITIES-BASED AND EVOLUTIONARY THEORIES

KOEN H. HEIMERIKS *
Rotterdam School of Management, Erasmus University

TEPPO FELIN ∫
Marriott School, Brigham Young University

NICOLAI FOSS ~
Copenhagen Business School
and
Norwegian School of Economics and Business Administration

MAURIZIO ZOLLO §
Bocconi

Journal of Management
Proposal for a Review Article

* Correspondence to: Department of Strategic Management and Business Environment, Burg. Oudlaan 50, 3062 PA Rotterdam, the Netherlands, kheimeriks@rsm.nl; ∫ 587 Tanner Building, Provo, UT 84602, 801 422-3478 (o), 801 422-0539 (f), teppo.felin@byu.edu; ~ Center for Strategic Management and Globalization, Copenhagen Business School, Porcelænshaven 24, 1st fl.; 2000 Frederiksberg; Denmark, njf.smg@cbs.dk and Department of Strategy and Management, Norwegian School of Economics and Business Administration, Breiviksveien 40; N-5045; Bergen; Norway, § Strategy Institute, Management Department, Vis Roentgen 1 (Room 4-A1-09), 20136 Milan, Italy, Maurizio.zollo@unibocconi.it.

The authors acknowledge the contributions from the participants at the “Micro-level Origins of Organizational Routines and Capability” Conference at the Rotterdam School of Management. Also, they are grateful for the research assistance from Nikola Derebanov, Arthur Dijkhof, Richard Blokhuis, Mieke van der Valk. All remaining errors are our own.
ABSTRACT

Over the past decades, many studies have relied on resource-, capability-based and evolutionary theories. While these theories continue to receive unprecedented scholarly attention, no comparative review of these literatures exists. The purpose of this review paper is to provide a comparative analysis and mapping of these three literatures. We use a unique dataset to systematically analyze these literatures over the period of 1980-2009 and review some 4,500 articles in the top 20 management journals (based on 19 key words identified from the three literatures). Based on this comparative review---which directly or indirectly build on the resource-based, capability-based and evolutionary traditions---our aims are threefold. First, we comparatively map these literatures and discuss progress. Second, we highlight how these theories are heavily intertwined yet also distinct, and we assess extant problems at the nexus of these literatures, specifically related to matters such as conceptual proliferation and overlap, levels of analysis, and assumptions. And third, having gone back to early scholarly work in these fields, we detail promising avenues for future research.

Key words: resource-based view, dynamic capabilities, evolutionary theory, comparative review
INTRODUCTION

An unprecedented amount of scholarly work in the field of organization science builds on resource-, capability-based and evolutionary theories.\(^1\) Despite (or perhaps as a consequence of) their ongoing proliferation, a comparative review of the resource-, capabilities-based and evolutionary theories of organization is missing. Absent a comprehensive review covering these fields simultaneously over an extended period, it remains hard to chart advances, overlaps or potential future directions. While each of these literatures of course has been independently reviewed in the past --- the resource-based view (e.g., Acedo et al., 2006; Armstrong & Shimizu, 2007), dynamic capabilities-based literature (e.g., Wang and Ahmed, 2007; Zahra and George, 2002), as well as evolutionary and routines-based theory (Becker, 2004; Nelson & Winter, 2002) --- there is an opportunity to also take comparative stock of the links and points of distinctions between these three literatures.

The resource-, capabilities-based, and evolutionary theories of organization seem to be tightly linked yet also separate and distinct in important ways. To illustrate one link between these literatures: resource-based logic focuses on organizational resources that are inimitable and socially complex (Barney, 1991), and thus the key constructs of evolutionary and capabilities-based theory --- that is, organizational routines and capabilities --- are often highlighted as a central resource that might generate competitive advantage (Eisenhardt & Martin, 2000; Teece & Pisano, 1994). The capabilities-based literature indeed is also intimately linked with and builds on evolutionary economics (Nelson & Winter, 1982; see Zollo & Winter, 2002). However, there are notable

\(^1\) We broadly capture extant work under these three labels (resource-, capabilities-based and evolutionary theories) though with the explicit recognition that a host of other characterizations have also been used: for example, literature on the “knowledge-based view” or “organizational learning” or “competencies,” etc. Given the breadth of our review (see “Methods” section below), the central constructs and articles from these literatures will also be included in the analysis as they use many of the same independent variables (e.g., experience) and many of the same concepts (routines, resources, etc).
differences between these literatures as well. For example, they often focus on different levels of
analysis: resource-based theory largely focuses on the organizational level while evolutionary
arguments tend to focus on a higher, population or industry level. Or, to provide another example,
the resource-based view has been seen as static and thus some have argued for the need for a distinct
type. This has resulted in an alternative theoretical approach relying on dynamic capabilities and
experiential -based models of organizations and competitive advantage (Teece et al., 1997;
Eisenhardt & Martin, 2000). While numerous studies have productively highlighted links between
resource and capabilities-based work (e.g., Makadok, 2001), or focused on points of distinction
(Teece et al., 1997), nonetheless there is no systematic or comparative review or mapping of how
these literatures (cf. Gavetti & Levinthal, 2004), whether conceptually or empirically, are inter-related
and different.

The purpose of this paper, then, is to offer a systematic and comparative review of the
resource-, capabilities-based and evolutionary theories of organization. For example, with our review
we illustrate how the intertwining and tight packing of various concepts has led to a problem where it
is hard to meaningfully distinguish where one concept begins (e.g., “resource”) and another ends
(e.g., “routines” or “capabilities”). Thus we hope to unravel these conceptual issues to avoid further
proliferation of concepts where differences between them might largely be semantic and not
substantive. More generally, in this review article we aim to go back to early work to map progress
and direct attention to potential interesting avenues for future research. We comparatively review the
three literatures and focus on overlap and distinctions between: concepts and definitions, questions,
levels of analysis and mechanisms, and key independent and dependent variables. In doing so, our
comparative review strives to be exhaustive, and thus we include over 4,500 articles from 1980-2008
from the top 20 management journals.

Next we describe the review methodology, after which we subsequently discuss progress and
preliminary problems at the nexus of the three theories. As we have not fully analyzed and coded the
data yet, the arguments in this proposal are preliminary, and particularly the tables and figures will be
carefully revised as we continue to work on this project. We finish this proposal by delineating some important potential avenues for future research.

**OVERVIEW OF RESOURCE-, CAPABILITY-BASED AND EVOLUTIONARY THEORY**

The three literatures in question have their substantive origins in the 1980s. Evolutionary theories antedate resource and capabilities-based theories and provided an important contribution to our understanding of industry structure and market dynamics. Perhaps Nelson and Winter’s (1982) greatest contribution to strategic management is their introduction of the “routines” construct into organizational discourse (Becker, 2004). The routines construct has become a central building block of such constructs as organizational capabilities (Zollo & Winter, 2002). The resource-based view, on the other hand, focuses on the advantage-bestowing characteristics of particular organizational resources, specifically resources that are valuable, rare, inimitable and non-substitutable (Barney, 1991). Each of these literatures builds on each other, and thus the definitional and conceptual overlap is significant, but also somewhat overwhelming (see Table 1). Thus it is worthwhile to take comparative stock of the respective overlaps and differences between these literatures to understand their respective contributions.

---

*Insert Table 1 about here*

---

**REVIEW METHODOLOGY**

To map extant work in resources, capability, and evolutionary theories, we document all articles published in the top 20 management journals that appear over the period 1980-2009. We limit our review to peer reviewed journal articles, thereby omitting books, book chapters, and other non-refereed publications (cf. Podsakoff *et al.*, 2005). To ensure a complete coverage of the literature across these three, different scholarly fields, we analyzed a total of 20 management journals. This is

---

2 While in this review paper focuses on the management literature, we are conscious that the central theories are being adopted in other disciplines e.g. information systems and psychology (Acedo *et al.*, 2006: 631).
done by identifying various fields (e.g. international business, organizational behavior, sociology, strategy) in which the three theories play a key role. The inclusion of high-impact journals in these fields was based on both the input of experts in each domain and a series of journal ranking studies that list various journal impact factors (e.g. Harzing, 2000; Podsakoff et al., 2005). Table 2 summarizes the journals which were included in the analysis. We also include Strategic Organization in this study as this journal is emerging as an influential outlet for research published within the theoretical traditions that we cover. Together these 20 journals include all main areas of research in the field of management (see Podsakoff et al., 2008: 649), except journals in finance, accounting, marketing, operations research, psychology, and research methods. We also left out practitioner-oriented journals (e.g., Harvard Business Review, Long Range Planning, California Management Review).

Data sources and gathering

Data for this study are obtained from various electronic data sources. First, a series of searches was conducted using ABI/INFORM, Business Source Premier, EBSCO, the Institute for Scientific Information (ISI) web, JSTOR, Science Direct, Swetsnet and the journal web pages. We used a set of 19 key terms that covered each of the three literatures. Table 2 shows the key terms included to identify the relevant articles.

Each of the focal journals was searched with title key words, from January 1, 1980 to January 31st, 2009 (or from the journal starting date if that was later than January 1, 1980). We choose 1980 as the starting year as the origins of the three theoretical traditions date back to seminal publications in
the early 1980s, e.g. Nelson and Winter (1982), Lippman and Rumelt (1982), Rumelt (1984), Wernerfelt (1984), Barney (1986). Second, to ensure that all relevant articles were included, we searched the Social Science Citation Index to identify the most highly cited articles in the three literatures that might not have been captured in the first step. Third, reference list of the 30 articles that were most highly cited were searched manually to identify any additional studies that should be included and which were not found with the previous steps. The citation data were obtained from the Institute for Scientific Information’s (ISI) Web of Knowledge database and Google Scholar (cf. Harzing and Van der Wal, 2009). These steps result in a dataset containing a total of 4,709 articles. Last, all the entries are again verified by an independent third scholar to check for consistency and a random error check was performed for 250 entries (97.4% consistency).

**Preliminary data and measures**

A guidelines document was put together which in detail describes the information to be gathered by the coders. The following entries were gathered for all articles: (1) author(s), (2) title, (3) year of publication, (4) theoretical/conceptual work, (5) key word(s), (6) level of analysis of (in)dependent variable (micro, meso, macro, or industry), (7) key findings, (8) data source, (9) independent variable(s), and (10) dependent variable(s). The first three entries, i.e. author(s), title, and the year of publication, were entered from the article itself. To determine the fourth entry, i.e. whether the article is theoretical or empirical, the article was coded ‘empirical’ in case any type of data was used to test a research question or hypothesis (i.e. both qualitative and quantitative data); otherwise it was coded ‘theoretical’. Thereafter, a fifth entry for each article consisted of one or more key words. For this, the coders used the list of key terms included in the study and they were listed in order of appearance. The sixth entry concerns the level of analysis of the main independent variables included in the study (entered only for empirical articles). Articles could include one or more of the following levels: micro (coded as ‘1’ if one or more independent measures described the individual and its characteristics; ‘0’ if otherwise), meso (coded as ‘1’ if one or independent measures described group and team-level variables and their characteristics; ‘0’ if otherwise), macro (coded as ‘1’ if one or
independent measures described organization-level variables and their characteristics; ‘0’ if otherwise), *industry* (coded as ‘1’ if one or independent measures described groups of organizations, populations and larger social systems and their characteristics; ‘0’ if otherwise). The last four entries were summarized using the contents of the abstract, discussion and methods sections. We are presently coding the independent and dependent variables sections, which we anticipate will yield particularly interesting and insightful results for our comparative review. And, where possible, the articles in the dataset will also be carefully revisited to capture definitional and conceptual development vis-à-vis the theories in question.

**DESCRIPTIVE RESULTS AND DISCUSSION**

The dataset for this study (as it presently stands) contains 4,709 articles, of which 1,413 are theoretical, 2,514 are empirical and 782 articles were coded ‘residual’ (e.g. book reviews, biographic and introductory pieces). Table 4A highlights the number of articles, by decade, within each tradition, and Table 4B highlights the occurrence of key words in titles.

---

*Insert Table 4a and 4b about here*

---

As discussed above, we are interested in the levels-related links and aspects of these literatures. The next figures present the absolute number of empirical studies and the level of analyses of the independent variables in the study. Figure 1 shows the number for all journals per year from 1980 to 2009. Figure 2 shows the number of articles per level of analysis separated for theoretical and empirical pieces, highlighting an important finding: the vast majority of scholarly attention in these three literatures has been dedicated to empirical studies at the macro-level (i.e. firm-level) of analysis. We carefully revisit this finding with regard to areas of future work that we believe deserve more careful attention (i.e. micro-macro links). Table 5 offers a more fine-grained breakdown of levels of analysis within each of the three theories.
Overlaps and distinctions

Beyond the fact that some theories have received more attention than others, there are not only many links between these literatures and their key constructs, but substantial differences as well. In addition to analyzing the articles in the comprehensive dataset, we also, as shown in Table 1, outline the amount of conceptual and definitional overlap between the resource, capabilities and evolutionary literatures. From this Table it is apparent that carefully specifying the links and points of distinction is worthwhile. We thus will carefully map the conceptual overlap and also highlight points of distinction between the literatures not only via the definitions that we gather but also by carefully categorizing the independent and dependent variables, as well as associated theoretical mechanisms, utilized in these literatures.

Another already-evident finding is the striking similarity in the independent variables used by each of these literatures, though they at times focus on different levels of analysis (whether individuals, teams, organizations, alliances, industry, etc). For example, time-dependent processes unify central currents within each of these literatures. Time-dependent (though level-independent) variables include: experience, history, repetition, path-dependence, accumulation and so forth. Thus, we can broadly categorize these concepts under one heading, along with explicating other conceptual and empirical categories across these literatures. That said, our initial dataset also suggests that a broad distinction that can be made between time-dependent processes (such as experience and path-dependence) and more “intentional” or deliberative mechanisms within each of the literatures. For example, resource-based reasoning appears to highlight more “rational” and deliberative mechanisms (cf. Barney, 1986), while evolutionary logic generally focuses on more “inevitable” temporal processes, at higher levels of analysis (with some notable exceptions). We seek to comparatively categorize the types of different mechanisms used within each of these literatures and thus to more
fully map the literatures in question. The anticipated end result of the comparative analysis will be a mapping which includes definitions, focal levels of analysis, independent and dependent variables and key mechanisms --- along with broader categories which suggest both similarities and differences across literatures.

TOWARDS A FUTURE RESEARCH AGENDA

Beyond providing a unique comparative review of the three target literatures, we also seek to more systematically develop a suggested agenda for future work. We place emphasis on the role that multi-level work might play in helping us better understand organizational behavior and heterogeneity. In particular, we highlight how extant conceptual proliferation might be solved by an effort to carefully take stock of the intersection of the resource, capability and evolutionary theories, with a specific focus on the aggregational, “bottom-up” (micro-macro) and emergent mechanisms that might unify and clarify the extant contributions of these theories. For example, we think that developing explicit micro-macro links between factors such as intentions, deliberate processes, choices and macro-outcomes shows promise in furthering our understanding of organizational heterogeneity --- something that centrally unites each of these literatures. Overall, building off of our comparative review and analysis, the final fourth of the paper will carefully explicate an agenda for future work.

REFERENCES


<table>
<thead>
<tr>
<th>Article</th>
<th>Definition</th>
<th>No. of Citations**</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Barney (1991)</td>
<td>Resources: all assets, capabilities and organizational processes, firm attributes, information, knowledge, etc. (or strengths) controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness (p. 101).</td>
<td>3,146 / 11,993</td>
</tr>
<tr>
<td>2. Penrose (1959)</td>
<td>Resources: include the physical things a firm buys, leases, or produces for its own use, and the people hired on terms that make them effectively part of the firm (p. 67)</td>
<td>- / 8,237</td>
</tr>
<tr>
<td>3. Wernerfelt (1984)</td>
<td>Resources: those tangible and intangible assets which are tied semipermanently to the firm (p. 172)</td>
<td>- / 6,644</td>
</tr>
<tr>
<td>4. Teece, Pisano &amp; Shuen (1997)</td>
<td>Dynamic capabilities: the firms’ ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environment (p. 516). Routines consist of firm-specific assets which are assembled in integrated clusters spanning individuals and groups so that they enable distinctive activities to be performed (p. 516).</td>
<td>1,724 / 6,186</td>
</tr>
<tr>
<td>5. Kogut &amp; Zander (1992)</td>
<td>Combinative capabilities: the intersection of the capability of the firm to exploit its knowledge and the unexplored potential of the technology, or the degree of 'technological opportunity' (p. 319).</td>
<td>1,225/ 3,811</td>
</tr>
<tr>
<td>6. Amit &amp; Schoemaker (1993)</td>
<td>Capabilities: a firm’s capacity to deploy resources, usually in combination, using organizational processes, to effect a desired end (p. 35).</td>
<td>710 / 2,981</td>
</tr>
<tr>
<td>8. Cohen &amp; Bacdayan (1994)</td>
<td>Routines: patterned sequences of learned behavior involving multiple actors who are linked by relations of communication and/or authority (p. 555)</td>
<td>124 / 504</td>
</tr>
<tr>
<td>9. Feldman (2000)</td>
<td>Routines: repeated patterns of behavior that are bound by rules and customs and that do not change very much from one iteration to another (p. 611)</td>
<td>110 / 357</td>
</tr>
</tbody>
</table>

Note: * As an exception, the original work cited in this table neither is was required to have appeared in the 1980-2009 timeframe nor did we restrict ourselves to journal articles but also included books; ** The number of citations mentioned are as reported respectively on ISI web and scholar.google.com are per 6/2009.
Table 2 Summary of Journals Included in the Analysis

Top 20 Management Journals

1. American Journal of Sociology *(AJS)*
2. Academy of Management Journal *(AMJ)*
3. Academy of Management Review *(AMR)*
4. Annual Review of Sociology *(ARS)*
5. Administrative Science Quarterly *(ASQ)*
6. American Sociological Review *(ASR)*
7. Industrial and Corporate Change *(ICC)*
8. Journal of International Business Studies *(JIBS)*
10. Journal of Management Studies *(JMS)*
11. Journal of Organizational Behavior *(JOB)*
12. MIS Quarterly *(MISQ)*
13. Management Science *(MS)*
14. Organization Science *(OS)*
15. Organization Studies *(OST)*
16. Organizational Behavior and Human Decision Processes *(OBHDP, formerly Organizational Behavior and Human Performance)*
17. Research in Organizational Behavior *(ROB)*
18. Research Policy *(RP)*
19. Strategic Management Journal *(SMJ)*
20. Strategic Organization *(SO)*

Table 3 Key Terms for Resource-, Capability-Based and Evolutionary Theory

<table>
<thead>
<tr>
<th>Resource-based theory</th>
<th>Capability-based theory</th>
<th>Evolutionary theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource</td>
<td>Capability</td>
<td>Routine</td>
</tr>
<tr>
<td>Asset</td>
<td>Competence</td>
<td>Memory</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Skill</td>
<td>Standard</td>
</tr>
<tr>
<td>Technology</td>
<td>Behavior</td>
<td>Heuristic</td>
</tr>
<tr>
<td>Information</td>
<td>Cognition</td>
<td>Habit</td>
</tr>
<tr>
<td></td>
<td>Learning</td>
<td>Rule</td>
</tr>
<tr>
<td></td>
<td>Practice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experience</td>
<td></td>
</tr>
</tbody>
</table>

Note: All alternative forms of these key terms were included in the literature search (e.g. technology, technological, resource(s), capability, capabilities, cognition, cognitive, etc.).
Table 4A Primary Theoretical Frameworks Used by Articles, 1980-2009

<table>
<thead>
<tr>
<th></th>
<th>Resource-based theory</th>
<th>Capability-based theory</th>
<th>Evolutionary theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-1989</td>
<td>476</td>
<td>377</td>
<td>66</td>
</tr>
<tr>
<td>1990-1999</td>
<td>922 (+ 48%)</td>
<td>499 (+ 32%)</td>
<td>100 (+ 52%)</td>
</tr>
<tr>
<td>2000-2009</td>
<td>1365 (+ 48%)</td>
<td>759 (+ 52%)</td>
<td>130 (+ 30%)</td>
</tr>
<tr>
<td>Total</td>
<td>2763</td>
<td>1635</td>
<td>296</td>
</tr>
</tbody>
</table>

N=4,709

Table 4B Key Terms Used by All Articles, Mutually exclusive 1980-2009

<table>
<thead>
<tr>
<th>Key term</th>
<th>Number of Times used (All articles)</th>
<th>Number of Times used (Theoretical)</th>
<th>Number of Times used (Empirical)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Resource</td>
<td>516</td>
<td>204</td>
<td>254</td>
</tr>
<tr>
<td>(2) Asset</td>
<td>50</td>
<td>21</td>
<td>28</td>
</tr>
<tr>
<td>(3) Knowledge</td>
<td>689</td>
<td>188</td>
<td>372</td>
</tr>
<tr>
<td>(4) Technology</td>
<td>884</td>
<td>210</td>
<td>538</td>
</tr>
<tr>
<td>(5) Information</td>
<td>624</td>
<td>251</td>
<td>323</td>
</tr>
<tr>
<td>(6) Capability</td>
<td>167</td>
<td>51</td>
<td>111</td>
</tr>
<tr>
<td>(7) Competence</td>
<td>51</td>
<td>9</td>
<td>38</td>
</tr>
<tr>
<td>(8) Skill</td>
<td>46</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>(9) Behavior</td>
<td>466</td>
<td>120</td>
<td>264</td>
</tr>
<tr>
<td>(10) Cognition</td>
<td>62</td>
<td>21</td>
<td>33</td>
</tr>
<tr>
<td>(11) Learning</td>
<td>375</td>
<td>127</td>
<td>200</td>
</tr>
<tr>
<td>(12) Practice</td>
<td>266</td>
<td>83</td>
<td>83</td>
</tr>
<tr>
<td>(13) Experience</td>
<td>202</td>
<td>24</td>
<td>120</td>
</tr>
<tr>
<td>(14) Routine</td>
<td>32</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>(15) Memory</td>
<td>65</td>
<td>5</td>
<td>28</td>
</tr>
<tr>
<td>(16) Standard</td>
<td>50</td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td>(17) Heuristic</td>
<td>54</td>
<td>38</td>
<td>15</td>
</tr>
<tr>
<td>(18) Habit</td>
<td>6</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>(19) Rule</td>
<td>89</td>
<td>20</td>
<td>40</td>
</tr>
</tbody>
</table>

N= 4,709

Note: Some articles refer to more than one theoretical foundation. In this Table, we have however only ascribed the article to the primary key word used. Moreover, this count also includes articles where a theoretical framework is not readily expected (e.g. literature and book reviews, editorial articles).
**Figure 1** Number of Articles per Level of Analysis per Year (absolute numbers)

\[N = 4,709\]

**Figure 2** Number of Articles per Level of Analysis per Year (Empirical and Theoretical Articles Reported Separately)
Table 5 Number of Articles per Level of Analysis for the Primary Theoretical Frameworks, 1980-2009

<table>
<thead>
<tr>
<th></th>
<th>Resource-based theory</th>
<th>Capability-based theory</th>
<th>Evolutionary theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>325</td>
<td>395</td>
<td>49</td>
</tr>
<tr>
<td>Meso</td>
<td>200</td>
<td>143</td>
<td>26</td>
</tr>
<tr>
<td>Macro</td>
<td>989</td>
<td>574</td>
<td>49</td>
</tr>
<tr>
<td>Industry</td>
<td>496</td>
<td>182</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>2,010</td>
<td>1,294</td>
<td>161</td>
</tr>
</tbody>
</table>

N=4,709

Note: Not all articles are included, specifically as 1,244 articles (both theoretical and “residual” articles) did not discuss or highlight any issues related to a specific level of analyses.