

## THE RESOURCE-BASED THEORY: DISSEMINATION AND MAIN TRENDS

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*Papers published on the resource-based theory (RBT) have made clear its widespread application, heterogeneity, and usefulness as a strategic approach. This paper empirically analyzes the assumptions underlying the theory from an inductive perspective. The paper differs from previous works by identifying the main trends within the theory and by noting their diffusion among the leading management-oriented journals. Three main trends are shown to coexist within RBT: the resource-based view, the knowledge-based view, and the relational view. Copyright © 2006 John Wiley & Sons, Ltd.*

### INTRODUCTION

In recent years many studies on the status, evolution, and/or trends of the resource-based theory (RBT) have been published<sup>1</sup> (Barney, 2001a; Priem and Butler, 2001; Barney, 2001b; Makadok,

2001; Mahoney, 2001; Williamson, 1999; Hoskisson *et al.*, 1999; Phelan and Lewin, 2000). This type of research is very valuable in illuminating the core ideas underpinning a given theory, thereby facilitating maximum returns from research efforts (Priem and Butler, 2001). Although there is still some debate on the scientific status of the theory (Priem and Butler, 2001; Barney, 2001b), and although some authors highlight certain problems that might delay the development of this research trend (Foss, 1998; Phelan and Lewin, 2000), the more recent of the above-mentioned studies do propose a series of ideas on which there is general consensus. Among these works, the following RBT commonalities can be found: (i) its widespread dissemination in academic literature and in management practices (Priem and Butler, 2001); (ii) its heterogeneous character, in that it encompasses different theories (Barney, 2001a; Mahoney, 2001) or perspectives (Makadok, 2001); and (iii) its reputation as a mainly strategic management approach (Phelan and Lewin, 2000; Williamson, 1999).

This work aims to employ an inductive perspective based on bibliometrical methods to empirically

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<sup>1</sup> There is no consensus on how to label the set of research works based on resources or capability: 'theory,' 'perspective,' 'view,' 'approach,' and so on. This is not an issue without importance because the use of one or the other indicates a different degree of development or a different scientific status (Priem and Butler, 2001). The main alternatives are (i) 'view' or 'perspective' (indicating a lack of coherence among the different contributions (Foss, 1997a, 1997b) or of predictive capacity (Conner and Prahalad, 1996; Miller and Shamsie, 1996)), and (ii) 'theory' (Barney, 2001a, 2001b). The present paper does not join this debate, preferring an analysis of the approach, rather than its name. The present paper therefore uses the term 'resource-based theory' (RBT) to delimit the general framework of this trend, and the terms 'resource-based view' (RBV) (Wernerfelt, 1984), 'knowledge-based view' (KBV) (Conner and Prahalad, 1996), 'relational view' (Dyer and Singh, 1998), and 'capability perspective' (Langlois and Foss, 1999) to refer to the main trends.

explore these core RBT elements. For this purpose the authors determine the publications that can be included within this approach or, at least, those that have used its contributions as the theoretical basis for their research. Specifically, this work is intended to: (a) identify the main trends in RBT—unlike Priem and Butler (2001), who relied on the 18 strategy research topics originally identified by Schendel and Hofer (1979) to assign RBT studies, the present paper focuses not on the research topics but, rather, on the trends that have arisen within the RBT; and (b) show the evolution of RBT, especially in terms of how it has affected other fields.

The justification of this work is based on one of the core principles currently guiding research in the study of organizations: the bounded rationality of individuals (Simon, 1957). It is very difficult, indeed almost impossible, to keep current with the developments and trends of an expanding and diverse subject such as the RBT. It follows that the analyses made by various researchers are limited by their own cognitive barriers and biases. These, in turn, are determined by the personal circumstances of the various researchers, including their education, their experiences, and the social groups to which they belong. This does not mean that there is necessarily any defect in the various reflections made in the studies; analyses from various perspectives remain pertinent and useful. However, it is probable that these reflections offer an incomplete picture of the theory (Bettis and Prahalad, 1986). To minimize these problems of subjectivity, an objective method can be used to examine the evolution and trends of a given field of study, based not on expert opinions (which are always subjective), but on an analysis of the scientific works that can be included within such approach (Ramos-Rodríguez and Ruíz-Navarro, 2004).

Bibliometry provides some of those objective methods (Small, 1974; White and Griffith, 1981). The references of a scientific paper indicate the theoretical and empirical foundations of the study, and an analysis of the references makes it possible to identify networks of authors and papers belonging to the same school, paradigm, or theory. The co-citation method is a powerful and widely used procedure to study the structure of scientific disciplines and trends.

This method allows for the determination of the research fronts being developed within a study field, as well as the links among them. In the case

of the RBT the results of such a study will be of interest for researchers in providing a panoramic view of the theory—with regard to both its dissemination and its internal make-up. The links among the resource-based view (RBV), the knowledge-based view (KBV), and the dynamic capability perspective are confirmed by the present study. In addition, some other peculiar features are noted that have not been highlighted in other studies (Grant, 1996a; Makadok, 2001; Conner and Prahalad, 1996). These include: (i) the similarities between the capability perspective and the RBV; (ii) the differentiation of the studies on knowledge; and (iii) the orientation of the approaches on alliances and relational rents.

The present paper begins with an analysis of the bibliometric methodology for determining a set of relevant publications or papers. In the following section, the present paper analyzes the theory's heterogeneity by identifying the main trends or approaches developed within it. In the third section the presence of the theory in the main social science journals is examined. The work concludes with the presentation of the main conclusions and future research lines.

## THE CO-CITATION METHOD

Detecting homogeneous areas in research networks is quite a common feature in bibliometrical analysis (Zitt and Bassecoulard, 1996). One of the most common structuring methods is the co-citation analysis. Much work has been done developing the theory and methodology of author co-citation analysis, firmly establishing it as a bibliometric research tool, realizing that new improvements on this methodology keep on coming out (Ahlgren, Jarneving, and Rousseau, 2003; Chen, Cribbin, and Macredie, 2002; White, 2003a, 2003b; and the special issue of the *Journal of the American Society for Information Science and Technology*, 2003). There are proposals arguing that author co-citation maps provide useful insights from which the intellectual structure of a field and the communication networks within it can be observed (McCain, 1990) assuming that bibliographic elements act as concept surrogates (Small, 2003). Moreover, because they analyze large, highly aggregated data sets, monitoring recurrent patterns sometimes over long time spans, a map 'neatly operationalizes the elusive notion of "consensus," so that the field, in

effect, reveals itself' (White, 1990: 92). As such, the map can show more than one observer can ever see or tell, no matter how qualified they are.

The co-citation method, which is based on a count of the number of times two documents or authors<sup>2</sup> are cited jointly in the same work (Small, 1974), is aimed at identifying groups of closely related documents that can be considered as belonging to the same 'research front' (Price, 1965), upon the premise that the more often two documents are cited together, the closer is the relationship between them (White and Griffith, 1981). This 'relationship' only means authors address the same broad questions, not that they necessarily agree with each other. Co-citation counts can be statistically analyzed and processed to produce maps showing the relative distances between authors.

Co-citation is used, in part, to answer the problem of inherent subjectivity in research, by making the assessment of key influences a quantitative, rather than a qualitative, endeavor. Nevertheless, despite its claim to objectivity, co-citation has its own set of biases which, independently from limitations originated by the source of information (Zitt and Bassecouard, 1996; Hicks, 1987), can cause distortions in the research results. The main concerns, for purposes of this work, are: (a) homogeneity (b) immediacy, and (c) stability. *Homogeneity* describes the problem of selecting the 'structuring papers,' because the threshold necessary for different knowledge fields may differ significantly (Zitt and Bassecouard, 1996; Hicks, 1988). *Immediacy* is related to the fact that the pursuit of new research topics tends to be cautious/conservative, placed on hold until a sufficient number of accumulated citations recommend it (Zitt and Bassecouard, 1996); for example, some researchers caution against reliance upon papers published within the last 3 years. Thus, late-breaking innovations might be underweighted. Finally, *stability* may be negatively impacted, just as a consequence to the inevitable fluctuations in research analysis from year to year (Zitt

and Bassecouard, 1996, recommend using multi-period database software to distinguish between these random fluctuations from causal drivers).

Any study based on co-citations must start from a set of source authors or documents that make up the core of the discipline or approach being analyzed (Callon, Courtial, and Penan, 1993), from which the co-citation matrix is obtained. This matrix lists the number of times two documents are cited together in other research works. The core documents allow a delimitation of the area under study on the basis that a scientific paper can be included when it cites one or more such source documents. Although it cannot be stated with absolute certainty that a given study should be included within the theory being analyzed, at least it can be stated that the study under consideration uses the contributions of such theory as the basis for reflection. Therefore, an analysis of all those publications can provide an objective idea of the theory's dissemination, its main trends, and its links (Small, 1974).

The selection of those source documents that make up the core of a theory or discipline is a critical stage in the process. To cover all the developments within the theory, the objective is to form a core as large as possible, while ensuring that this core is made up only of documents that can be truly considered as shaping the theory. Achieving this balance is not easy when analyzing such a diverse field as the RBT (Foss, 1998).

Thus, when analyzing a scientific field, the usual criterion to establish the core is relevance (most cited papers in the considered journals). In the present case this procedure has two drawbacks.

First, the use of the relevance criterion favors older documents to the detriment of more recent ones that might have had a greater impact on the theory. This entails a static view of the theory, and does not capture the new trends being shaped in recent years. Secondly, the bibliometric analysis requires a prior delimiting of the journals through which the theory is disseminated. Although RBT has some journals that are recognized as the main means of dissemination, these journals also publish papers corresponding to other theory trends and, conversely, some relevant works might have been published in other journals.

A possible solution to these problems is to resort to the opinion of experts (Culnan, 1986). However, to rely on 'experts' means that the analysis will begin on the basis of the subjectivity of an 'expert,'

<sup>2</sup> There is some debate on the appropriateness of using authors or documents when a co-citation analysis is made (White and Griffith, 1981; Culnan, 1986). Notwithstanding, in our study it seems more convenient to use documents rather than authors since we intend to establish the structure and development of a very specific research area. In these micro-level studies (Garfield, 1979) the use of authors who might have conducted research in dissimilar trends can cause a distortion of results.

which was precisely what the study intended to avoid.

For these reasons, and to maintain the basic principles of the co-citation method, the present study utilizes an *ad hoc* heuristic method to delimit the RBT's core that would include both the scope and pertinence attributes noted above. This method was inspired by Hummon and Doreian's (1989) and Hummon and Carley's (1993) path analysis ideas, and it entails starting from an initially reduced core, made up of the most basic works on the theory, which is later extended with works published in more recent years ('snowball' process).

In delimiting the initial core, the present study begins with Acedo *et al.* (2001), who carried out an analysis of the main research trends in the field of management between 1992 and 1999. The RBT was delimited by 13 documents that were among the most cited in the management field during the period under study (see Table 1), thus meeting the relevance criterion mentioned above.

Because the work of Acedo *et al.* (2001) had started from a very restrictive threshold (requiring a large number of citations), it was possible that some relevant work before 1992 had been left out. It was therefore decided to add all papers published between 1984 and 1991 that satisfied the following additional criteria: (i) those that had cited Wernerfelt (1984) (as an *a priori* indicator of their link to the theory); (ii) those that had been cited more than 50 times in the 1992–2001 period (relevance criterion); (iii) and those that loaded significantly in the factor corresponding to the RBT when the factorial analysis was carried out using the results of Acedo *et al.* (2001) (similarity criterion). The latter criterion reflects the proximity of the paper in question to other

documents according to the citations in other studies.

In order to enlarge the core, the period under analysis (1992–2001) was divided into three sub-periods: (i) 1992–94; (ii) 1995–97; and (iii) 1998–2001. The papers published in any of the journals included in the SSCI that cited at least two of the documents of the core (successively enlarged, corresponding to each sub-period) were identified, assuming that these studies can be included in the RBT (Zitt and Bassecouard, 1996). Within this set of documents, those that were cited more frequently (relevance) were identified, using different thresholds (50 citations for the 1992–94 period, 40 for 1995–97, and 30 for 1998–2001) coherent with other bibliometric studies carried out with similar time horizons (Culnan, 1986; Rowlands, 1999). The similarity criterion was applied to the selected documents by means of the factorial analysis described above. After this stage the number of works included in the core was 41.

Finally, although this entailed a violation of the objectivity principle established, the resulting core was compared with the literature used in 19 reviews of the resource theory. The purpose was to take into account the potential inclusion of significant works for the resource theory that, due to the criteria used (especially the reference to the work of Wernerfelt, 1984), had not been included in the iterations already made. Four works were included that met the two criteria required in the previous stages—relevance and similarity. Because those four documents were prior to 1992, the process was repeated, starting from the new core, to analyze the potential incorporation of new works to the final core. However, no new papers were included.

Table 1. Documents from the initial core

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Amit RJ, Schoemaker PJH. 1993. <i>Strategic Management Journal</i> <b>14</b> (1): 33–46
Barney JB. 1986. <i>Management Science</i> <b>32</b> : 1231–1241
Barney JB. 1991. <i>Journal of Management</i> <b>17</b> (1): 99–120
Conner KR. 1991. <i>Journal of Management</i> <b>17</b> : 121–154
Dierickx I, Cool K. 1989. <i>Management Science</i> <b>35</b> : 1504–1513
Kogut B, Zander U. 1992. <i>Organization Science</i> <b>3</b> : 383–397
Lippman SA, Rumelt RP. 1982. <i>Rand Journal of Economics</i> <b>13</b> : 418–438
Nelson RR, Winter SG. 1982. <i>An Evolutionary Theory of Economic Change</i>
Penrose E. 1959. <i>The Theory of Growth of the Firm</i>
Peteraf M. 1993. <i>Strategic Management Journal</i> <b>14</b> (3): 179–192
Prahalad CK, Hamel G. 1990. <i>Harvard Business Review</i> <b>66</b> (3): 79–91
Rumelt RP. 1984. <i>Competitive Strategic Management</i>
Wernerfelt B. 1984. <i>Strategic Management Journal</i> <b>5</b> (2): 171–180

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Once this enlarged core of the RBV was obtained, it was necessary to verify that the resulting co-citation matrix was appropriate for a bibliometric study. As Rowlands (1999) has observed, in a highly coherent subject area the number of zeros (or very low values) must be relatively small. Taking this approach and that of White and Griffith (1981), two criteria were established to screen the initial list of candidate documents: (i) the number of total co-citations received; and (ii) the number of zeros and ones in its line of the matrix. This process eliminated three documents (Bowman and Hurry, 1993; Day, 1994; Khanna, Gulati and Nohria, 1998). In the present work, the final core was made up of the 42 documents that are listed in Table 2.

In conclusion, the study of co-citations provides two basic elements for the study of the theory. First, the statistical treatment of the core document co-citation matrix allows an identification of the main trends developed within the theory. Secondly, the analysis of a large set of scientific works that can be considered as included in the theory provides insight into the theory's evolution and dissemination, as well as many other related issues (topics discussed in the works, connections among them, most prolific research centers, and so on) that are not specifically discussed in this paper.

## RESULTS OF THE CO-CITATION ANALYSIS

The starting point of the present empirical and inductive analysis of the main trends within the RBT is the co-citation matrix. The rows and columns of this squared matrix are the source documents of the core and the figures in the boxes indicate the number of papers that have cited each pair of documents. Starting from the co-citation matrix the present study estimated Pearson's correlation matrix. These correlation quotients are indicators of similarities between the co-citation profiles of two source works. Using correlations instead of a count of co-citations has two important advantages (Moya, Jiménez, and Moneda, 1998; Rowlands, 1999). First, it allows for data standardization, thus avoiding the scale effects caused by the number of citations made of the different documents. Secondly, it reduces the number of zeros existing in the matrix, preventing problems in the application of statistical methods.

The present study used two<sup>3</sup> statistical multivariate techniques (factor analysis and multidimensional scaling) to reduce the number of dimensions and to obtain groups of documents that define trends or approaches within the RBT, as well as to obtain a graphic representation that could be easily interpreted. Each of these techniques allows the recognition of particular aspects on the relationship between source works.

Table 3 shows the results of the factorial analysis with varimax rotation. Despite the fact that, due to the factor correlation, oblimin rotation would be recommended, the results after applying both methods make no difference, and varimax rotation has the advantage of showing the loads on more than one factor and expresses the importance of the variables loading on a given factor. The results show the presence of three factors that explain 90.1 percent of the variance. Moreover, the documents included in each factor do so with very high loads.

According to the terminology used in the present study, factor 1 represents the resource-based view (RBV) and, in addition, it includes some of the representative works of the dynamic capability perspective (Nelson and Winter, 1982; Teece, Pisano, and Shuen, 1997). Factor 2 represents the knowledge-based view (KBV), and factor 3 represents the relational view (or the application of the RBV to inter-organizational relations). The loads of each factor express the more or less central character of the different documents: Barney (1991) and Wernerfelt (1984) in the case of the RBV; Kogut and Zander (1992) and Grant (1996a) for the KBV; and Dyer (1996) for the relational view.

Interesting inferences can be drawn from the analysis of the documents loading on more than one factor. It is necessary to differentiate between positive and negative loads. Whenever a document loads positively on more than one factor, this indicates that such a document serves as a bridge between two or more approaches. It should be noted that the basic works of the dynamic capabilities perspective load positively both on factor 1 and on factor 2, indicating their origins in the RBV and its links to the KBVs. Something

<sup>3</sup> In order to define graphically the groups, we also carried out an hierarchical cluster analysis. The results show the presence of two large groups: one made up by factor 1 documents and the other by the works of factors 2 and 3.

Table 2. Central core

- Amit RJ, Schoemaker PJH. 1993. *Strategic Management Journal* **14**(1): 33–46
- Barney JB. 1986b. *Management Science* **32**: 1231–1241
- Barney JB. 1991. *Journal of Management* **17**(1): 99–120
- Conner KR. 1991. *Journal of Management* **17**: 121–154
- Dierickx I, Cool K. 1989. *Management Science* **35**: 1504–1513
- Kogut B, Zander U. 1992. *Organization Science* **3**: 383–397
- Lippman SA, Rumelt RP. 1982. *Rand Journal of Economics* **13**: 418–438
- Nelson RR, Winter SG. 1982. *An Evolutionary Theory of Economic Change*
- Penrose E. 1959. *The Theory of Growth of the Firm*
- Peteraf M. 1993. *Strategic Management Journal* **14**(3): 179–192
- Prahalad CK, Hamel G. 1990. *Harvard Business Review* **66**(3): 79–91
- Rumelt RP. 1984. *Competitive Strategic Management*
- Wernerfelt B. 1984. *Strategic Management Journal* **5**(2): 171–180
- Cohen WM, Levinthal DA. 1990. *Administrative Science Quarterly* **35**(1): 128–153
- Collis DJ. 1991. *Strategic Management Journal* **12**: 49–68
- Rumelt RP. 1991. *Strategic Management Journal* **12**: 167–185
- Black JA, Boal KB. 1994. *Strategic Management Journal* **15**: 131–148
- Lado AA, Wilson MC. 1994. *Academy of Management Review* **19**: 699–727
- Levinthal DA, March JG. 1993. *Strategic Management Journal* **14**: 95–112
- Mahoney JT, Pandian JR. 1992. *Strategic Management Journal* **13**(5): 363–380
- Collis DJ, Montgomery CA. 1995. *Harvard Business Review* **93**(4): 118–128
- Conner KR, Prahalad CK. 1996. *Science* **7**: 477–501
- Dyer JH. 1996. *Strategic Management Journal* **17**(4): 271–291
- Eisenhardt KM, Schoonhoven C. 1996. *Organization Science* **7**: 136–150
- Grant RM. 1996a. *Strategic Management Journal* **17**: 109–122
- Grant RM. 1996b. *Organization Science* **7**: 375–387
- Hart SL. 1995. *Academy of Management Review* **20**: 986–1014
- Hunt SD, Morgan RM. 1995. *Journal of Marketing* **59**: 1–15
- Miller D, Shamsie J. 1996. *Academy of Management Journal* **39**: 519–543
- Mowery DC, Oxley JE, Silverman BS. 1996. *Strategic Management Journal* **17**: 77–91
- Powell TC. 1995. *Strategic Management Journal* **16**(1): 15–37
- Spender JC. 1996. *Strategic Management Journal* **17**: 45–62
- Szulanski G. 1996. *Strategic Management Journal* **17**: 27–43
- Teece DJ, Pisano G, Shuen A. 1997. *Strategic Management Journal* **18**(7): 509–533
- Tsoukas H. 1996. *Strategic Management Journal* **17**: 11–25
- Zander V, Kogut B. 1995. *Organization Science* **6**: 76–91
- Dyer JH, Singh H. 1998. *Academy of Management Review* **23**: 660–679
- Nahapiet J, Ghoshal S. 1998. *Academy of Management Review* **23**: 242–266
- Barney JB. 1986a. *Academy of Management Review* **11**: 656–665
- Grant RM. 1991. *California Management Review* **33**: 114–135
- Leonard-Barton D. 1992. *Strategic Management Journal* **13**: 111–125
- Reed R, DeFillippi RJ. 1990. *Academy of Management Review* **15**: 88–102

Table 3. Factor analysis

	Component		
	1	2	3
Barney JB. 1991. <i>Journal of Management</i> <b>17</b> (1): 99–120	0.982		
Wernerfelt B. 1984. <i>Strategic Management Journal</i> <b>5</b> (2): 171–180	0.974		
Amit RJ, Schoemaker PJH. 1993. <i>Strategic Management Journal</i> <b>14</b> (1): 33–46	0.970		
Dierickx I, Cool K. 1989. <i>Management Science</i> <b>35</b> : 1504–1513	0.966		
Conner KR. 1991. <i>Journal of Management</i> <b>17</b> : 121–154	0.947		
Penrose E. 1959. <i>The Theory of Growth of the Firm</i>	0.946		
Lippman SA, Rumelt RP. 1982. <i>Rand Journal of Economics</i> <b>13</b> : 418–438	0.944		
Rumelt RP. 1984. <i>Competitive Strategic Management</i>	0.941		
Prahalad CK, Hamel G. 1990. <i>Harvard Business Review</i> <b>66</b> (3): 79–91	0.940		
Reed R, DeFillippi RJ. 1990. <i>Academy of Management Review</i> <b>15</b> : 88–102	0.940		
Barney JB. 1986a. <i>Management Science</i> <b>32</b> : 1231–1241	0.940		
Peteraf M. 1993. <i>Strategic Management Journal</i> <b>14</b> (3): 179–192	0.937		
Rumelt RP. 1991. <i>Strategic Management Journal</i> <b>12</b> (3): 167–185	0.935		
Grant RM. 1991. <i>California Management Review</i> <b>33</b> : 114–135	0.933		
Mahoney JT, Pandian JR. 1992. <i>Strategic Management Journal</i> <b>13</b> (5): 363–380	0.930		
Collis DJ. 1991. <i>Strategic Management Journal</i> <b>12</b> : 49–68	0.916		
Barney JB. 1986b. <i>Academy of Management Review</i> <b>11</b> : 656–665	0.906		
Black JA., Boal KB. 1994. <i>Strategic Management Journal</i> <b>15</b> : 131–148	0.846	–0.468	
Leonard-Barton D. 1992. <i>Strategic Management Journal</i> <b>13</b> : 111–125	0.844		
Lado AA, Wilson MC. 1994. <i>Academy of Management Review</i> <b>19</b> : 699–727	0.819	–0.418	
Collis DJ, Montgomery CA. 1995. <i>Harvard Business Review</i> <b>73</b> (4): 118–128	0.812		
Miller D, Shamsie J. 1996. <i>Academy of Management Journal</i> <b>39</b> : 519–543	0.806		
Hunt SD, Morgan, RM. 1995. <i>Journal of Marketing</i> <b>59</b> : 1–15	0.789	–0.410	
Nelson RR, Winter SG. 1982. <i>An Evolutionary Theory of Economic Change</i>	0.786	0.476	
Hart SL. 1995. <i>Academy of Management Review</i> <b>20</b> : 986–1014	0.738	–0.470	
Teece DJ, Pisano G, Shuen A. 1997. <i>Strategic Management Journal</i> <b>18</b> (7): 509–533	0.675	0.527	
Powell TC. 1995. <i>Strategic Management Journal</i> <b>16</b> (1): 15–37	0.650	–0.577	
Kogut B, Zander U. 1992. <i>Organization Science</i> <b>3</b> : 383–397		0.945	
Grant RM. 1996a. <i>Strategic Management Journal</i> <b>17</b> : 109–122		0.914	
Zander V, Kogut B. 1995. <i>Organization Science</i> <b>6</b> : 76–91		0.882	
Grant RM. 1996b. <i>Organization Science</i> <b>7</b> : 375–387		0.879	
Spender JC. 1996. <i>Strategic Management Journal</i> <b>17</b> : 45–62	–0.443	0.859	
Nahapiet J, Ghoshal S. 1998. <i>Academy of Management Review</i> <b>23</b> : 242–266	–0.441	0.855	
Conner KR, Prahalad CK. 1996. <i>Science</i> <b>7</b> : 477–501		0.847	
Szulanski G. 1996. <i>Strategic Management Journal</i> <b>17</b> : 27–43	–0.461	0.843	
Tsoukas H. 1996. <i>Strategic Management Journal</i> <b>17</b> : 11–25	0.400	0.843	
Cohen WM, Levinthal DA. 1990. <i>Administrative Science Quarterly</i> <b>35</b> (1): 128–153		0.839	0.475
Levinthal DA, March JG. 1993. <i>Strategic Management Journal</i> <b>14</b> : 95–112		0.760	0.469
Mowery DC, Oxley JE, Silverman BS. 1996. <i>Strategic Management Journal</i> <b>17</b> : 77–91	–0.515	0.675	0.479
Dyer JH. 1996. <i>Strategic Management Journal</i> <b>17</b> (4): 271–291			0.910
Dyer JH, Singh H. 1998. <i>Academy of Management Review</i> <b>23</b> : 660–679			0.872
Eisenhardt KM, Schoonhoven C. 1996. <i>Organization Science</i> <b>7</b> : 136–150	0.443		0.725

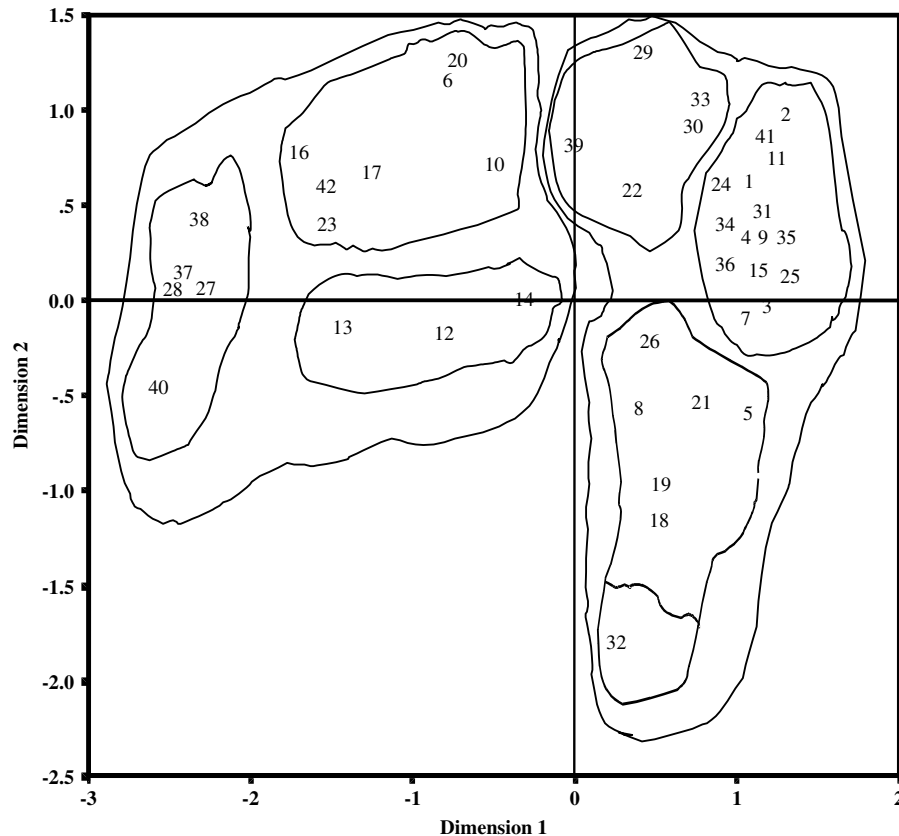
similar can be said about the documents loading on factors 2 and 3. Their analysis (Cohen and Levinthal, 1990; Levinthal and March, 1993; Mowery, Oxley, and Silverman, 1996) allows us to state that many of the research works analyzing inter-organizational relations have devoted special attention to the issues related to organizational learning and knowledge dissemination. Finally, the work by Eisenhardt and Schoonhoven (1996) loads on both factor 1 and factor 3, demonstrating this

role as a bridge between the RBV and the inter-firm alliances mentioned above.

Negative loads have a different meaning, which usually is not included among the results presented in bibliometric studies. However, here they raise some interesting questions. A negative load on a factor indicates reverse co-citation profiles between a given document and the other works expressed by that factor. Expressed in probability terms it indicates that, whenever a paper cites one or more

documents indicated in a given factor, it is very unlikely that it will also cite the document with a negative load. Therefore, it is showing a disparity or divergence between those documents, either in their theoretical developments or in the topics

they discuss, so that other researchers do not relate them in any sense and therefore do not tend to cite them together. This occurs between documents of factors 1 and 2. That is, there are several basic RBV works that move away from the KBV and,



- |                                 |                                       |                                      |  |
|---------------------------------|---------------------------------------|--------------------------------------|--|
| 1 Amit RJ, Schoemaker PJH. 1993 | 8 Conner KR, Prahalad CK. 1996        | 15 Grant RM. 1996a                   | 22 Levinthal DA, March JG. 1993            |
| 2 Barney JB. 1986a              | 9 Conner KR. 1991                     | 16 Grant RM. 1996b                   | 23 Lippman SA, Rumelt RP. 1982             |
| 3 Barney JB. 1986b              | 10 Dierickx I, Cool K. 1989           | 17 Hart SL. 1995                     | 24 Mahoney JT, Pandian JR. 1992            |
| 4 Barney JB. 1991               | 11 Dyer JH, Singh H. 1998             | 18 Hunt SD, Morgan RM. 1995          | 25 Miller D, Shamsie J. 1996               |
| 5 Black JA, Boal KB. 1994       | 12 Dyer JH. 1996                      | 19 Kogut B, Zander U. 1992           | 26 Mowery DC, Oxley JE, Silverman BS. 1996 |
| 6 Cohen WM, Levinthal DA. 1990  | 13 Eisenhardt KM, Schoonhoven C. 1996 | 20 Lado AA, Wilson MC. 1994          | 27 Nahapiet J, Ghoshal S. 1998             |
| 7 Collis DJ. 1991               | 14 Grant RM. 1991                     | 21 Leonard-Barton D. 1992            | 28 Nelson RR, Winter SG. 1982              |
|                                 | 29 Nelson RR, Winter SG. 1982         | 36 Rumelt RP. 1991                   |  |
|                                 | 30 Penrose E. 1959                    | 37 Spender JC. 1996                  |  |
|                                 | 31 Peteraf M. 1993                    | 38 Szulanski G. 1996                 |  |
|                                 | 32 Powell TC. 1995                    | 39 Teece DJ, Pisano G, Shuen A. 1997 |  |
|                                 | 33 Prahalad CK, Hamel G. 1990         | 40 Tsoukas H. 1996                   |  |
|                                 | 34 Reed R, DeFillippi RJ. 1990        | 41 Wernerfelt B. 1984                |  |
|                                 | 35 Rumelt RP. 1984                    | 42 Zander V, Kogut B. 1995           |  |

Figure 1. Multidimensional scaling



similarly, some source documents of the KBV that do not seem to have any relation to the RBV. The results of applying the multidimensional analysis allow this issue to be studied in greater depth.

The multidimensional analysis provides a graphic vision of the different trends. Figure 1 shows the result of such analysis.

In Figure 1, the *y*-axis shows the division between the two main RBT trends—RBV and KBV (with the work of Teece *et al.*, 1997, in between the two). Within KBV, two large subgroups can be identified along the *x*-axis. One subgroup—the one on the right side (closer to the RBV group)—asserts that knowledge is the most important strategic resource for organizations (Conner and Prahalad, 1996; Grant, 1996a; Kogut and Zander, 1992). Grant (1996b: 375) has pointed out that his paper ‘develops a knowledge-based theory of organizational capability, and draws upon research into competitive dynamics, the resource-based view of the firm, organizational capabilities, and organizational learning.’

The other KBV subgroup—located to the left side—maintains a less positivist view of knowledge analysis and adopts a more pluralistic epistemology, redolent of social constructivism (Spender, 1996; Tsoukas, 1996). Although some of these works self-identify as being part of RBV (Mowery *et al.*, 1996; Nahapiet and Ghoshal, 1998), their theoretical arguments deviate significantly from standard RBV. Thus, for example, Tsoukas (1996) developed his argument by drawing upon interpretative philosophy, Bourdieu’s sociology, ethnomethodology, and discursive psychology. Although this is not a general difference, this subgroup shares Spender’s (1996) position on the importance of collective knowledge—a knowledge that is tacit and social. In contrast, other KBV works presuppose that knowledge resides at an individual level, thereby making knowledge integration the essential function for a firm (Grant, 1996a, 1996b; Kogut and Zander, 1992).

Surprisingly, these two branches of KBV ideas are defended by the two editors—Grant and Spender—of the monographic edition of the *Strategic Management Journal* (Winter Special Issue, 1996). Grant himself (1996a) acknowledged the different approaches of the two editors, which originate from their different scientific backgrounds—economy in the case of Grant, and

philosophy, psychology, and technology in the case of Spender.

It is also necessary to state that the links between the documents belonging to a group or trend must be considered not only in their content or orientation, but also in the perception of the authors who have cited these works and who have, for one reason or another, tended to cite them together with others. This is the case with the documents that analyze organizational relations and relational rents (Dyer, 1996; Dyer and Singh, 1998; Eisenhardt and Schoonhoven, 1996). Only Dyer and Singh (1998) mentioned and analyzed inter-firm knowledge-sharing routines as another attribute in the generation of competitive advantages through inter-organizational relations. Despite this, the authors who have later studied alliances and relations between firms have focused mainly on knowledge transfer and learning. Consequently, these documents have been included in the KBV.

The RBV can be also divided into two large groups—the first being designated ‘classic’ in the present study, and the other being understood as including ‘extensions’ of this basic core. The first integrates all the documents of the initial RBV core, including the papers of the dynamic capabilities perspective. There is a distinction between them, but this is not great. The ‘extensions’ group is made up of papers that have applied the foundations of the RBV to different management fields or disciplines, including natural environment (Hart, 1995), human resources (Lado and Wilson, 1994), total quality management (Powell, 1995), and marketing (Hunt and Morgan, 1995). It also includes other pioneering studies that have performed empirical research within the theory (Miller and Shamsie, 1996) or that have focused on the application to management practice (Collis and Montgomery, 1995). All these works were published some years after the first papers on RBV, and can be understood as attempts to extend this theory trend both vertically (empirical studies, dissemination to management practice) and horizontally (different study areas and fields).

Taking a more dynamic perspective, the RBV has evolved in two clear directions. The first is discerned by moving along the *x*-axis of the graphic toward reflections related to organizational learning and knowledge. The second is discerned by moving along the *y*-axis toward extensions or

applications of the RBV in different areas of management (human resources, marketing, environment, and quality management). The y-axis seems to depict a more-or-less static view of the theory. At one end are documents making up the dynamic-capacities perspective and, at the other, are the works applying the basic ideas of the RBV, which have been criticized for their static view, in fields such as marketing (Hunt and Morgan, 1995), the natural environment (Hart, 1995), or total quality management (Powell, 1995).

The proximity between the dots (documents) of each group also provides interesting information. The classic RBV is highly concentrated, showing the coherence that later authors appreciate in it, and reflecting the strong tendency to cite these documents together. In contrast, this is not observed in the remaining groups, showing that some of them are still in their consolidation process, or they include diverse contributions from fields poorly related among themselves.

Finally, the canonical correlation analysis allows a deeper analysis of the existing links among the different identified trends, while confirming the above findings. Table 4 shows significant links established by means of the canonical-*R* and the redundancy index. As can be observed, the so-called RBV 'classic group' has high values in relation to the dynamic-capability perspective, confirming the small existing distance, as well as existing with the group called 'extensions.' The dynamic-capability perspective shows significant values in its links with both the 'extension' group of the RBV and the KBV subgroup. The rest of the links are not significant.

A general view of the table allows a perception of how works classified within the 'classic' group have an important role in the origin of the other trends. The canonical correlation analysis allows an identification of the strength of the correlation existing among groups, and also the relative importance of each of the original variables (documents) in the canonical relation. There are six highly weighted works that must be taken into account. The first is Barney's (1991) paper with a load greater than 0.9 and significant for each analyzed relation. Similar to this, but with a different load, is the work by Wernerfelt (1984). The works of Nelson and Winter (1982) and Prahalad and Hamel (1990) appear with the highest loads in the relation between the dynamic-capability perspective and all the other groups (with respect to the 'classical' group, Penrose (1959) should also be noted). Finally, Kogut and Zander (1992) and Cohen and Levinthal (1990) play this same role in relation to those papers that consider knowledge to be the basis of competitive advantage.

## DISSEMINATION OF THE RESOURCE-BASED THEORY

Taking the final central core as a starting point, the papers published in the period from 1991 to 2001 that cited any of the documents included in it were identified. A comprehensive search in the SSCI was conducted, with a final result of 3904 documents. Some authors have declared that one citation of a core document is sufficient to assign

Table 4. Canonical correlation analysis: Canonical-*R* and redundancy index

	Dynamic-capability perspective	Extension group	KBVs (positivistic)	KBVs (sociological/psychological)	Relational view
Classic group	$R = 0.985^{***}$ Redundancy 0.669	$R = 0.934^{***}$ Redundancy 0.602			
Dynamic-capability perspective		$R = 0.791^{***}$ Redundancy 0.457	$R = 0.957^{***}$ Redundancy 0.621		$R = 0.572^{***}$ Redundancy 0.357
KBVs (positivistic)				$R = 0.943^{***}$ Redundancy 0.649	

\*\*\* Significant at the level of 0.01

a paper to a given trend (Rowlands, 1999). However, others consider that a single reference might have been made for spurious reasons (for example, a cross-reference) and recommend that a paper should be assigned to an approach or paradigm only when it cites two or more core documents (Culnan, 1986). Zitt and Bassecoulard (1996) recommend a comparison of results for different thresholds. In the current study there were 1644 papers with at least two citations of core documents (41% of the initial 3904 documents) and 921 works with at least three references to core documents. A statistical analysis of distributions by year of publication and by type of journal showed no significant difference (Mann–Whitney's *U*, sig. 0.140 for the distribution by year, and sig. 0.083 for the distribution by type of journal). Based on these premises it was considered that an article belonged to the resource approach, or at least that it used this view in its theoretical foundations, if it included two or more citations of core documents.

Papers classified within the resource theory have been published in 259 different journals (of those included in the SSCI), which indicates a large dissemination in terms of number of journals. However, there are some priority journals. Thus, up to 35 percent of the total articles ascribed have been published in five journals.<sup>4</sup> The journals were grouped according to the classification criterion used by the Journal Citations Report (JCR) of the ISI. The journals not included in the database were classified by means of the descriptors used for cataloguing in the U.S. Library of Congress. This was not the only criterion used because the JCR allowed for a more precise classification. The use of these criteria allowed for a first classification of the papers published by academic disciplines, as shown in Table 5. Results show the intense growth of the RBT—in total number of articles published as well as in the number of journals used for its diffusion. As might be expected, most of the works belong to the extended area of management. However, an increasing dissemination of the theory in other areas or disciplines can be observed, in some

cases quite apart from the management field. During the 1992–94 period articles published in 'management' journals represented 85 percent of the total articles related to this theory, while in the year 2001 this percentage decreased to 58.4 percent. The diffusion is obvious in fields such as production management or psychology. Especially relevant is the increase in the information systems field, due to KBV development, showing the close link existing between works related to knowledge and information systems.

It can be stated that the RBV originally started from an economic base, rather than a sociological base (Barney, 1991; Williamson, 1999; Mahoney, 2001). However, there is a growing production in fields such as psychology or information systems, as a result of the development of research lines such as knowledge management.

Harzing's (2000) journal ranking and classification was used to analyze in greater depth the papers published in the field of management. The present study groups management journals by research fields. From among the 1195 papers included in the above list, only 36 were not included in Harzing's classification. This classification allowed for an analysis of the RBT along the different academic areas included in the large field of management. The results of this grouping are shown in Table 6. This table shows that the RBT of a firm is a theoretical trend which originated and has been developed mainly in the fields of general management and strategy, although the proportion of papers published in the strategy category decreased from 73.8 percent in the period 1992–94 to 57.7 percent in the period 1998–2000. Nevertheless, the present study verifies the expansion of the theory in three management fields: marketing, organizational studies, and production operation and management (POM). In contrast, its dissemination in finance is almost non-existent.

Looking at the data grouped by trends, we can observe that the expansion of the KBV has occurred mainly in the strategy and organizational behavior areas, showing by this duality the existing division among the knowledge studies mentioned in the previous section.

In relation to the journals, it can be noted that the number of strategy journals has stayed more or less stable, but that a notable increase has occurred in the other disciplines as the RBT spread to these knowledge areas.

<sup>4</sup> These journals are *Strategic Management Journal*, *Academy of Management Journal*, *Academy of Management Review*, *Organization Science*, and *Journal of Management Studies*.)

Table 6. Diffusion of papers within the field of management

	1992-94		1995-97		1998-2000		2001		Total articles		Main Journal
	Articles	Journals	Articles	Journals	Articles	Journals	Articles	Journals	Articles	%	
Not classified	2	1	5	2	27	7	2	1	36	3.0	<i>Advances in Strategic Management</i>
Economics	0	0	1	1	2	1	1	1	4	0.3	<i>Journal of Economics and Management Strategy</i>
Finance	0	0	1	1	2	1	1	1	4	0.3	<i>Accounting Organizations and Society</i>
General and strategy	96	11	187	17	282	18	208	14	773	64.6	<i>Strategic Management Journal</i>
Innovation	4	3	9	2	12	3	5	2	30	2.5	<i>IEEE Transactions on Engineering Management</i>
Marketing	6	3	22	8	38	10	15	7	81	6.7	<i>Journal of Marketing</i>
Organization studies	13	3	36	6	55	6	35	4	139	11.6	<i>Organizational Science</i>
Production management	3	2	18	6	55	9	13	5	89	7.4	<i>International Journal of Technology Management</i>
Quantitative methods	6	4	13	3	16	4	4	1	39	3.2	<i>Management Science</i>

## CONCLUSIONS

This paper has carried out an empirical and inductive analysis of the RBT with the purpose of identifying the main trends developed within it and their influence and dissemination in the most relevant journals in the social sciences. This empirical study is based on a bibliometric study, more specifically on a co-citation analysis, which has allowed the establishment of relatively reliable frontiers in the evolution of the RBT. To determine the core, or set of key theory documents, an ad hoc procedure was employed to obtain a core as large as possible meeting both the requirements of relevance (impact of works included) and pertinence or similarity (relative guarantee that the documents can be classified in the RBT).

This work presents a clear and objective description of the intellectual structure of the RBT. By analyzing the intellectual roots of a field, we sought to identify the basic intellectual commitments which serve as the foundations for this field as it matures.

The results of the study show the presence of three main trends within the RBT: (i) the resource-based view; (ii) the knowledge-based view; and (iii) the relational view. The core documents of each of these approaches appear clearly delimited, although it is possible to identify some papers that act as linkages between them. This is the case for the dynamic capabilities approach (Teece *et al.*, 1997; Nelson and Winter, 1982), which appears as a nexus between the classic works from the RBV and the most recent studies from the KBV. Nevertheless, the appearance of documents not jointly cited by later authors may show relatively unconnected trends. In this sense, the existing distance between the RBV—or some of its extensions—and the less positivist or economic approaches within the KBV can be remarked.

These results point out the potential of bibliometrical methods for the analysis of ideas and scientific development. These methods permit identifying the different research fronts that keep on emerging within a certain field or theory, and may provide clear tools for researchers to identify potential new directions as well as locating their work within the field (Locke and Perera, 2001). This paper, in particular, provides a useful insight for new researchers as they can identify which are the main contributions of the RBT and how they are interrelated. As for researchers in general, this

work may be helpful for understanding the evolution of the RBV as a field of study, revealing the vitality and evolution of this approach while offering some possibilities of understanding its future development.

Besides, the results show an exponential growth in the number of published papers that use this theory as a theoretical foundation. Despite the diffusion of these approaches has mainly occurred within management oriented journals, and among them within strategic journals, it can also be observed in a growing number of papers in other management fields (marketing, production management, organization studies) and in other fields not directly related to management (economy, information systems, research and development).

The conclusions reached must be confirmed by additional studies for more in-depth research of some issues not discussed here, including: (i) the consideration of minority trends that have great potential; (ii) the analysis of co-words to identify the most relevant issues being analyzed in RBT-connected research; (iii) the dissemination of the theory not only across management journals, but also in other journals from other trends or disciplines; and (iv) the links between the RBT and other theories and approaches to the study of organizations.

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