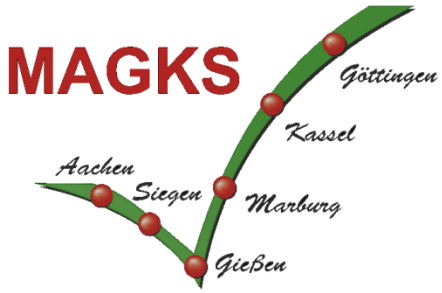

Joint Discussion Paper Series in Economics

by the Universities of

Aachen · Gießen · Göttingen
Kassel · Marburg · Siegen

ISSN 1867-3678

No. 05-2014

Benjamin R. Kern and Malte Ackermann

Shedding Some Light on the Dark Matter of Competition: Insights from the Strategic Management and Organizational Science Literature for the Consideration of Diversity Aspects in Merger Review

This paper can be downloaded from
http://www.uni-marburg.de/fb02/makro/forschung/magkspapers/index_html%28magks%29

Coordination: Bernd Hayo • Philipps-University Marburg
Faculty of Business Administration and Economics • Universitätsstraße 24, D-35032 Marburg
Tel: +49-6421-2823091, Fax: +49-6421-2823088, e-mail: hayo@wiwi.uni-marburg.de

SHEDDING SOME LIGHT ON THE DARK MATTER OF COMPETITION: INSIGHTS FROM THE STRATEGIC MANAGEMENT & ORGANIZATIONAL SCIENCE LITERATURE FOR THE CONSIDERATION OF DIVERSITY ASPECTS IN MERGER REVIEW

Benjamin R. Kern, Malte Ackermann*[+]

ABSTRACT

A merger between two innovation competitors is often suspected to reduce the variety of heterogeneous entities which are currently undertaking R&D or which are well situated to undertake R&D in a certain field. The consequential reduction of "diversity" can be detrimental to innovation because it reduces the number of independent sources for possible future innovations and might furthermore lead to an alignment of formerly different R&D programs. However, if "diversity" indeed benefits innovative performance, even merged firms should have an incentive to maintain it in-house. Therefore, this article aims to bring to light whether firms can indeed be expected to create or maintain "diversity" post-merger. By focusing on the strategic management and organizational science literature we will demonstrate that the creation/maintenance of independent entities is indeed considered as an important determinant for the innovativeness and general performance of firms. Nevertheless, we will also show that this strategy has several grave implementation problems and might be hampered by certain trade-offs. As a consequence, competition authorities cannot presume that a reduced "inter-firm diversity" will get substituted by an increased "intra-firm diversity" without fail.

JEL: B52, K21, L4, M1, O31, O32

I. INTRODUCTION

The adequate consideration of innovation aspects in merger review was, and still is, one of the most controversially discussed issues among antitrust scholars.[1] A particularly critical aspect

* Benjamin René Kern; Philipps-University Marburg, Department of Business Administration and Economics. Chair of Economic Policy, Email: kernb@wiwi.uni-marburg.de.

[+] Malte Ackermann; Philipps-University Marburg, Department of Business Administration and Economics, Chair of Technology and Innovation Management, Email: malte.ackermann@wiwi.uni-marburg.de.

We would like to thank Wolfgang Kerber, Michael Stephan and the participants of the 4th conference of the Spanish Association of Law and Economics for valuable comments. The authors are of course responsible for all remaining errors.

[1] *See* Richard J. Gilbert & Steven C. Sunshine, *Incorporating Dynamic Efficiency Concerns in Merger Analysis: The Use of Innovation Markets*, 63 ANTITRUST L.J. 569 (1995); Richard T. Rapp, *The Misapplication of the Innovation Market Approach to Merger Analysis*, 64 ANTITRUST L.J. 19 (1995); Robert J. Hoerner, *Innovation Markets: new Wine in old Bottles?*, 64 ANTITRUST L.J. 49 (1995); George A. Hay, *Innovations in Antitrust Enforcement*, 64 ANTITRUST L.J. 7 (1995); Howard M. Morse, *The Limits of*

of this discussion deals with the question whether a more or rather a less concentrated market structure (mostly narrowed to product market structure) is beneficial to innovation.[2] However, until to date, theoretical[3] as well as empirical[4] contributions delivered rather contradictory results in the sense that they support the proposition that highly competitive just as much as more concentrated markets can basically spur innovation. Hence, from this perspective, it is not clear whether a merger, which leads to a higher market concentration, is detrimental or maybe even beneficial to innovation.

However, while mainstream economics focused almost exclusively on the likely effects of a change of market structure on the firms' incentives to invest in R&D and their ability to innovate, a change of the market structure can also have an additional effect on innovation. This effect originates from the fact that a merger, which causes a reduction of the number of innovation competitors, can also harm innovation because it reduces the variety of heterogeneous entities which are currently undertaking R&D or which are well situated to undertake R&D in a certain field. This reduction can be detrimental to the overall innovativeness of an industry when we consider firms as being different with respect to their resources, their organizational structure, their business culture and the way how they do business.[5] As soon as we allow for these differences, it is appropriate to regard each firm as an entity which has unique capabilities and individual beliefs about the most promising way to innovate. Since innovation is particularly subject to uncertainty, it is impossible to

---

Innovation Markets, 2 ANTITRUST & INTELL. PROP. (ABA SECTION OF ANTITRUST LAW NEWSL.) 22 (2001); Dennis W. Carlton & Robert H. Gertner, *Intellectual Property, Antitrust and Strategic Behavior, in* 3 INNOVATION POLICY AND THE ECONOMY 29 (Adam B. Jaffe et al. eds., MIT Press 2003); Robert W. Davis, *Innovation Markets and Merger Enforcement: Current Practice in Perspective*, 71 ANTITRUST L. J. 677 (2003); Michael Katz & Howard Shelanski, *Mergers and Innovation*, 74 ANTITRUST L. J. 1 (2007); Josef Drexl, *Anti-Competitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market*, 8 J. COMP. L. & ECON. 507 (2012).

2 *See* Rapp, *supra* note 1, at 26 *et seq*.; Carlton & Gertner, *supra* note 1, at 39 *et seq*.; Davis, *supra* note 1, at 681 *et seq*.

3 *See*, *e.g.*, Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources to Invention*, *in* THE RATE AND DIRECTION OF ECONOMIC ACTIVITY 609 (Richard R. Nelson ed., Princeton University Press 1962); Glenn C. Loury, *Market Structure and Innovation*, 93 Q. J. ECON. 395 (1979); Richard J. Gilbert & David M.G. Newbery, *Preemptive Patenting and the Persistence of Monopoly*, 72 AM. ECON. REV. 514 (1982); Jennifer F. Reinganum, *The timing of innovation: Research, development, and diffusion*, *in* 1 HANDBOOK OF INDUSTRIAL ORGANIZATION 849 (Richard Schmalensee & Robert Willig eds., Elsevier 1989); FREDERIC M. SCHERER & DAVID ROSS, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE, at 513-660 (Houghton-Mifflin, 3rd edn. 1990); Jan Boone, *Competitive Pressure: The Effects on Investments in Product and Process Innovation*, 31 RAND J. ECON. 549 (2000); Jan Boone, *Intensity of Competition and the Incentive to Innovate*, 19 INT. J. IND. ORGAN. 705 (2001); Philippe Aghion et al., *Competition and Innovation: An Inverted-U Relationship*, 120 Q. J. ECON. 701 (2005).

4 For an excellent overview *see* Richard J. Gilbert, *Looking for Mr. Schumpeter: Where Are We in the Competition-Innovation Debate?*, *in* 6 INNOVATION POLICY AND THE ECONOMY 159, at 187-204 (Adam B. Jaffe et al. eds., MIT Press 2006).

5 *See* Wolfgang Kerber, *Competition, Innovation and Maintaining Diversity Through Competition Law*, *in* ECONOMIC APPROACHES TO COMPETITION LAW: FOUNDATIONS AND LIMITATIONS 173 (Josef Drexl et al. eds., Edward Elgar 2010). *See also* Gilbert, *supra* note 4, at 185-186.

determine how a certain innovation has to be achieved or which R&D project will be most successful. As a consequence, for the overall innovativeness of an industry, or respectively a certain field of research, it is also beneficial that a variety of independent firms undertake R&D due to their subjective resources and expectations. Hence, in contrast to the considerations about the firms' incentives and abilities to innovate, this dimension of competition highlights the role of "diversity" for innovation and supports the idea that this characteristic of competition might also be worth protecting.

It is remarkable that these considerations also played a role in a considerable number of challenges to mergers and acquisitions, investigated by the Federal Trade Commission (FTC) and the Department of Justice (DoJ).[6] In particular, the dissenting statements of Commissioner Mozelle W. Thompson and Commissioner Pamela J. Harbour in connection with the FTC's decision to close the Genzyme/Novazyme case indicate that this dimension of competition was, and still is, considered as an important but also highly disputed aspect in the review of mergers.[7] However, in contrast to its relevance in applied merger review, this property of competition is much less recognized in the respective antitrust literature. One explanation for this phenomenon might be the fact that mainstream economics and especially the modern industrial organization literature have fundamental difficulties to capture this dimension of competition, which Joseph Farrell therefore called vividly "the dark matter of competition"[8].[9] Apart from that it is also argued that, if "diversity" indeed has a noticeable effect on innovation, a merged entity should have an incentive to preserve such a fruitful environment in-house.[10] Hence, a reduction of "diversity" among different firms ("inter-firm diversity") might get balanced by an increase in the diversity within a certain firm ("intra-firm diversity") by itself. As a consequence, if one had to expect such an effect, antitrust authorities would have no reason to further consider this issue.

---

6 *See, e.g.*, United States v. Lockheed Martin Corp., Civ. No. 98-00731 (D.D.C. complaint filed March 23, 1998); United States v. Halliburton Co., Civ. No. 98-2340 (D.D.C. complaint filed Sept. 29. 1998); Glaxo plc, 119 F.T.C. 815 (1995); The Upjohn, Co., 121 F.T.C. 44 (1996); Ciba-Geigy Ltd., 123 F.T.C. 842 (1997); Pfizer Inc. and Warner-Lambert Co., FTC Dkt. No. C-3957 (June 19, 2000).

7 Mozelle W. Thompson, *Dissenting Statement of Commissioner Mozelle W. Thompson Genzyme Corporation's Acquisition of Novazyme Pharmaceuticals Inc*., File No. 021-0026 (Jan 13, 2004), *available at* http://www.ftc.gov/os/2004/01/thompsongenzymestmt.pdf (Aug. 20, 2013); Pamela J. Harbour, *Dissenting Statement of Pamely J. Harbour Genzyme Corporation's Acquisition of Novazyme Pharmaceuticals Inc.*, File No. 021-0026 (Jan 13, 2004), *available at* http://www.ftc.gov/os/2004/01/harbourgenzymestmt.pdf (Aug. 20, 2013).

8 *See* Joseph Farrell, *Complexity, diversity, and antitrust*, 51 ANTITRUST BULL. 165 (2006).

9 *See, e.g.*, Stanley J. Metcalfe, *Evolution and Economic Change*, *in* TECHNOLOGY AND ECONOMIC PROGRESS 54 (Aubrey Silbertson ed., Macmillan 1989); Richard R. Nelson, *Recent Evolutionary Theorizing about Economic Change*, 33 J. ECON. LIT. 48 (1995); Kerber, *supra* note 5.

10 *See* Raaj K. Sah & Joseph E. Stiglitz, *The Invariance of Market Innovation to the Number of Firms*, 18 RAND J. ECON. 98, at 106 (1987).

Therefore, by assessing the management and organizational science literature, this article aims to bring to light whether and how firms consider the preservation of "diversity", (1) either as a consequence of a newly created "intra-firm diversity", or (2) because of a direct maintenance of an acquired firm's autonomy, after a merger. For this purpose we firstly investigate the "Corporate Entrepreneurship" (CE) literature which highlights the creation of independent subunits and spinoffs within a corporation. We will thereby demonstrate that the idea of a creation of independent entities in-house is indeed considered as an important determinant for the innovativeness and general performance of firms. However, we will also show that firms, pursuing a CE strategy, will most likely face several grave implementation problems and trade-offs. The same holds true for a direct maintenance of "diversity" after a merger. Although the examined literature on post-merger integration presents strong arguments in favor of securing an acquired firm's independence and autonomy in order to keep its innovation capacity, it also indicates that there will emerge a trade-off between this objective and the realization of efficiency gains through integration.

Hence, on the one hand, the extensive management and organizational science literature suggests that considerations about the preservation of "diversity" in merger review might be exaggerated because firms should indeed have a strong incentive to preserve "diversity" in-house. On the other hand, however, our analysis also shows that antitrust authorities cannot trust in the creation/maintenance of such an "intra-firm diversity" after a merger, since the merged entity will most likely face grave implementation problems and trade-offs.

This article is structured as follows. In Part II we will provide a review of the neoclassical economics and evolutionary economics literature and highlight the differences between the considerations about the incentives and abilities to innovate on the one hand and the benefits of "diversity" for innovation on the other. Thereby we will also provide some exemplary merger cases in order to illustrate how the idea of a preservation of an "inter-firm diversity" was considered in the applied U.S. merger review during the last two decades. Subsequently, in Part III we will analyze to what extent considerations about the creation/maintenance of independent entities within firms can be found in the management and organizational science literature and whether we find evidence that this strategy is indeed regarded as a promising approach. Thereby we want to answer the question whether antitrust authorities can expect a preservation of "diversity", either as a consequence of a newly created "intra-firm diversity", or because of a direct maintenance of an acquired firm's autonomy, after a merger. Part IV then concludes by drawing implications for the consideration of "diversity" aspects in merger review.

II. COMPETITION AND INNOVATION

A. The incentives and abilities to innovate

A broad range of literature is dealing with the interdependencies between competition and the firms' incentives and abilities to innovate. The controversy in the academic debate started with Joseph Schumpeter who was particularly interested in the effects of competition on innovation.[11] In his early work he assumed that competition fosters innovation in the sense that predominantly creative "entrepreneurs" are the main driver for innovation.[12] In his view competition has to be seen as a process in which mainly small, innovative start-up firms come up with new ideas which then become manifest in new products and production processes.[13] In his later works, however, Schumpeter conversely argued that mainly big firms in highly concentrated markets are the key to technological progress.[14] Thereby he assumed that only these firms have the necessary ability to finance R&D projects, diversify the risks of innovative activities and appropriate its gains in a sufficient scale.

Apart from Schumpeter, a rich literature dealing with the effects of competition and concentration on innovation exists. Arrow demonstrated for example that the fruits of an innovation might (at least to some extent) solely replace previous profits (replacement-effect) if the innovator already has some market power on the respective pre-innovation market.[15] Hence, in the extreme case of a firm holding a monopoly position, the firm must fear that it will solely cannibalize its current profits by introducing an innovation to the market. As a result, a firm which possesses market power on a pre-innovation market would have fewer incentives to invest in R&D than a firm which faces fierce competition and which therefore generates merely little or even no pre-innovation profits.

Another very popular and likewise important argument why a rather less concentrated market structure drives innovation is the assumption that a firm, which does not fear rivalry from other competitors, would have no incentives at all to develop new products or production processes, because there is no need to improve or defend its market position[16] Yet another aspect why more competition might be the beneficial environment for innovation is based on the idea of patent races.[17] An important characteristic of these models is the assumption that

---

[11] *See* JOSEPH A. SCHUMPETER, THE THEORY OF ECONOMIC DEVELOPMENT. AN INQUIRY INTO PROFITS, CAPITAL, CREDIT, INTEREST, AND THE BUSINESS CYCLE (Cambridge/Mass, Harvard University Press 1934).

[12] *Id*. at 74 *et seq*.

[13] *Id*.

[14] *See* JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM AND DEMOCRACY, at 131-134 (Harper 1942).

[15] *See* Arrow, *supra* note 3.

[16] *See* John R. Hicks, *Annual Survey of Economic Theory: The Theory of Monopoly*, 3 ECONOMETRICA 1 (1935). *See also* Katz & Shelanski, *supra* note 1, at 9.

[17] *See* Loury, *supra* note 3; Reinganum, *supra* note 3.

perfect patent protection exists. Under such a setting, the innovator gains an exclusive right to market the invention. Thus, every firm taking part in this race has a strong incentive to be the first to invent. As a consequence, consumers may benefit from such an environment in the sense that new products or technologies are discovered earlier as compared to a situation in which there is solely little or no competition.

However, like in the later work of Schumpeter, other scholars also argued that concentrated markets can equally foster innovation. By assuming product innovations and imperfect patent protection, Frederic Scherer and David Ross showed that increased competition can indeed foster innovation (stimulus factor) - but solely until a certain limit.[18] Too much competition might also hinder innovation in the sense that under very intense competition it is no longer possible to undertake profitable R&D projects because the innovation costs can no longer be recouped (market room factor). The authors therefore described the interrelation between competition and innovation in the pattern of an inverted-U. This finding was confirmed in a recent article of Aghion et al.[19] By differentiating between sectors with "neck-and-neck competitors" and those with "leading-" and "laggard competitors", they showed that strong competition as well as market power can foster innovation, depending on whether the incentives to strive for "Schumpeterian rents" or the incentives to realize a so-called "escape-competition effect" outweighs the other. Other authors even demonstrated that also a monopoly might have strong incentives to innovate in order to defend its current monopoly position by patenting new technologies before potential competitors.[20] As a result, to date, no general causal interrelationship between market structure and the incentives and abilities to innovate has been found. However, this finding should be interpreted with caution. The majority of the contributions presented above investigated the interrelation between product market structure and innovation instead of competition in innovation and innovation (or the structure of an 'Innovation Market'[21] and innovation). Since the competitors with respect to innovation do not necessarily compete with one another on actual product markets, a merger which affects innovation competition does not inevitably affect product market concentration.[22] If, however, a merger does not change product market structure, many arguments about the firms' incentives and abilities to innovate, stemming from considerations about pre-innovation profits and the appropriability

[18] *See* Scherer & Ross, *supra* note 3, at 630-644.
[19] *See* Philippe Aghion et al., *Competition and Innovation: An Inverted-U Relationship*, 120 Q. J. ECON. 701 (2005).
[20] *See* Richard J. Gilbert & David M.G. Newbery, *Preemptive Patenting and the Persistence of Monopoly*, 72 AM. ECON. REV. 514 (1982).
[21] *See* Gilbert & Sunshine, *supra* note 1.
[22] *See* Gilbert & Sunshine, *supra* note 1; Drexl, *supra* note 1.

of innovation gains, do no longer play a role in such an environment. As a consequence, many findings of the literature cited above cannot be transferred one-to-one to the interrelation between innovation competition and innovation.

B. Competition, Diversity, Parallel Research and Innovation from an Evolutionary Economics Perspective

While the discussion introduced in the last chapter mainly dealt with the question how competition influences the firms' incentives and abilities to innovate, we will now focus on the role of "diversity" for innovation. It is remarkable that, in comparison to the questions related to a firm's incentives and abilities to innovate, much less research has been carried out with respect to this dimension of competition for innovation. However, in 2006 Joseph Farrell introduced a paper which demonstrates the relevance of "diversity" from a competition policy perspective in a very vivid way.[23] In his article about "Complexity, diversity, and antitrust" he described his situation as a person who has got a peanut allergy in the context of the research efforts of the big pharmaceutical firms for a proper treatment for this allergy. The story was told as follows: A small biotech company called Tanox pursued a promising peanut allergy treatment called TNX-901. But, in 2003, Tanox's corporation partners (Novartis and Genentech) insisted on the withdrawal of this research trial because, as they argued, the most promising drug was already found. However this promising treatment - Xolair - was already in the market for different indications. Whereon Farrell wondered:

> "[...] why not pursue both potentially life-saving treatments? Apparently Tanox thought it worth pursuing TNX-901 given the status of Xolair, which would be the normal market test if no 'contract got in the way' […]."[24]

So he asked himself: "Isn't diversity of approach one of the benefits of competition?"[25] And: "How, if at all, should antitrust seek to protect such diversity against (let's assume) technical experts' best judgements about 'the most promising project'?"[26]

Even though very anecdotal, Farrell's considerations out of a private demand lead our attention to the question about the role of "diversity" for innovation and consumer welfare. Compared to the debate related to the firms' incentives and abilities to innovate, which is dominated by the industrial organization literature, the considerations about the important role of "diversity" are mainly rooted in evolutionary economics. The theoretical basis for

---

[23] *See* Farrell, *supra* note 8.
[24] Farrell, *supra* note 8 at 166.
[25] *Id*. at 166.
[26] *Id*. at 166.

considerations about these aspects can be seen in the Hayekian concept of "competition as a discovery procedure".[27] Therein Hayek assumed that knowledge is always tacit, fragmental and dispersed.[28] Beside the storable, scientific knowledge, he emphasized the meaning of knowledge as a "particular circumstance[s] of time and place" which "never exists in concentrated or integrated form but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess".[29] Thus, for Hayek, knowledge has an inevitably subjective character. This holds especially true for individual expectations, abilities, routines or a firm's business culture which is very important for day-to-day business, but hard to teach and learn. As a consequence, all individuals and all firms have a different knowledge base and should therefore be regarded as heterogeneous entities. Besides that, the idea of subjective knowledge in combination with (true) uncertainty[30] also implies that the firms do not perfectly know ex ante which product is suited best to fulfil consumers' needs, match with their preferences or how a certain innovation should be achieved best. Instead, each firm necessarily has to form its own expectations. This implies, especially in regard to innovation, that actions with respect to the future always rely on assumptions and expectations which can be either right or wrong.

This point of view is again in line with Farrell who wondered whether one important characteristic of competition might already be the persistence with approaches that other market participants think unpromising.[31] Farrell suggested that otherwise, "[…] if alternative approaches were clearly smart, even a monopoly could profitably pursue [them]".[32] This dimension of competition, the benefits of having a variety of different entities in the competition process, is what Farrell called very pictorially "the dark matter of competition".[33]

The described knowledge problem is also a key component of evolutionary economics more generally.[34] In their seminal works, Richard R. Nelson and Sidney G Winter, for example, consider firms as diverse sets of "routines".[35] In this connection, competition is considered as a process of variation and selection in which heterogeneous firms continuously offer solutions, in the form of new or at least modified products, for the problems and needs

---

27 *See* Friedrich A. Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519 (1945); Friedrich A. Hayek, *Competition as a Discovery Procedure*, *in* NEW STUDIES IN PHILOSOPHY, POLITICS, ECONOMICS AND THE HISTORY OF IDEAS 179 (Friedrich A. Hayek ed., University of Chicago Press 1978).

28 *See* Friedrich A. Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519, at 519 (1945).

29 Hayek, *supra* note 28 at 519.

30 *See* FRANK H. KNIGHT, RISK, UNCERTAINTY, AND PROFIT, (Houghton Mifflin 1921).

31 *See* Farrell, *supra* note 8, at 168.

32 Farrell, *supra* note 8, at 168.

33 *Id*. at 168.

34 *See* Nelson *supra* note 9, Metcalfe *supra* note 9, Kerber *supra* note 5.

35 *See* RICHARD R. NELSON & SIDNEY G. WINTER, AN EVOLUTIONARY THEORY OF ECONOMIC CHANGE, at 96 *et seq*. (Harvard University Press 1982).

of consumers.[36] Thus, competition has an inherent experimental character of trial and error in which only the firms which have the right beliefs and expectations will prevail, while the others will disappear.[37] As a result, a reduction in the number of competitors is understood as a natural phenomenon in the competition process.

In contrast to the original idea of Nelson and Winter, a further reduction in the number of independent competitors by mergers and acquisitions can nevertheless be detrimental for innovation. This applies if an already small number of innovation competitors coincide with the existence of remarkable entry barriers for the participation in a certain process of innovation competition.[38] In this case, the induced reduction of "diversity" cannot get balanced by new firms which could otherwise enter the process of innovation competition. However, this does not imply that the preservation of "diversity" should be put above everything else. It is undisputed that a trade-off between the benefits of having several independent firms undertaking R&D on the one hand and the advantages of integrating these efforts into a stronger and more efficient entity on the other can emerge.[39] Hence, in analogy to Oliver Williamson's idea of an "efficiency defence"[40], such considerations about possible innovation related efficiency gains should likewise be an integral part within the assessment of innovation effects of mergers.

Beside Hayek and the evolutionary economics literature, the view of heterogeneity between market participants is also shared in the management literature, particularly in the "resource-based view of the firm".[41] This field of literature highlights the importance of a firm's particular resources like especially trained staff, experience, patents or a firm's business culture.[42] Thus, in contrast to mainstream economics, where firms differ almost exclusively by the nature of their cost functions, firms are considered as entities which differ also with respect to their particular capabilities – capabilities which cannot be acquired and adopted easily in an adequate period of time. In regard to innovation, this assumption implies

---

36 *Id.*

37 *Id.*

38 The idea of entry barriers for the participation in the process of innovation competition is closely linked to the proposed assessment of specialized assets in the Innovation Market Analysis. *See* Richard J. Gilbert & Steven C. Sunshine, *supra* note 1, at 588 *et seq.*

39 *See, e.g.*, Wesley M. Cohen & Steven Klepper, *The Tradeoff Between Firm Size and Diversity in the Pursuit of Technological Progress*, 4 SMALL BUS. ECON. 1 (1992).

40 *See* Oliver E. Williamson, *Economics as an Anti-Trust Defense: The Welfare Trade-Offs*, 58 AM. ECON. REV. 18 (1968).

41 *See* EDITH PENROSE, THE THEORY OF THE GROWTH OF THE FIRM (John Wiley and Sons 1959); Jay B. Barney, *Firm Resources and Sustained Competitive Advantage*, 17 J. MANAGE. 99 (1991); CYNTHIA A. MONTGOMERY, RESOURCE-BASED AND EVOLUTIONARY THEORIES OF THE FIRM: TOWARDS A SYNTHESIS (Kluwer Academic Publishers 1995).

42 *See, e.g.*, Scott L. Newbert, *Empirical Research on the Resource-Based View of the Firm: An Assessment and Suggestions for Future Research*, 28 STRATEG. MANAGE. J. 121 (2007).

that not only the incentives and the abilities to innovate matter, but also the variety of heterogeneous firms of which each might carry unique capabilities and ideas.

Apart from the insights provided by economists and scholars working in the field of strategic management, it is also important to refer to the biodiversity literature where researchers analyze for instance the consequences of a decrease in the richness of species as a result of monoculture or dying breeds.[43] In this respect it is argued that "diversity" matters in order to preserve nature's capability to adapt to new conditions of a changing environment. This proposition is based on research findings which demonstrated that biodiversity indeed increases the probability that some species will adapt to an exogenous shock and therefore allow for a faster adjustment of the ecosystem to environmental changes.[44] Furthermore, Tilman et al. have shown that, due to a so-called "probability effect", the productivity of plants is positively correlated with the degree of biodiversity.[45] These characteristics of biodiversity can also be understood as an "option-" or "insurance value" which implies that "diversity" might play an essential role, even though the benefits are not obvious to us at the moment.[46]

It is interesting that some of the particular arguments put forward in the biodiversity literature can be applied again to the economic context. The idea of an "option value", for instance, is also well known to economists.[47] In the competition context this value is created due to the fact that, under uncertainty, it is a priori unknown which firm or technology is suited best to solve a certain problem in the future or how a certain technology can be achieved.[48] From this point of view, it can be of relevance that a variety of independent firms exists. In analogy to the biodiversity literature, "diversity" should, one the one hand, augment the likelihood that there is at least one firm which has the necessary capabilities to adapt to a

---

[43] *See* GISELA LINGE, COMPETITION POLICY, INNOVATION, AND DIVERSITY, at 122 *et seq*. (Tectum Verlag 2008); For a rich overview on the relevance of biodiversity *see e.g.* Nina-Marie E. Lister, *A systems approach to biodiversity conservations planning*, 49 ENVIRONMENTAL MENTORING AND ASSESSMENT 123 (1998).

[44] *See, e.g.*, Randall Hughes & John J. Stachowitz, *Genetic diversity enhances the resistance of a seagrass ecosystem to disturbance*, 101 P. NATL. ACAD. SCI. USA. 8998 (2004); Boris Worm & J. E. Duffy, *Biodiversity, productivity and stability in real food webs*, 18 TRENDS ECOL. EVOL. 162 (2003); David Tilman & J. A. Downing, *Biodiversity and stability in grasslands*, 367 NATURE 363 (1994).

[45] *See*, David Tilman et al., *Diversity, productivity and temporal stability in the economics of humans and nature*, 49 J. ENVIRON. ECON. MANAG. 405, at 412 *et seq*. (2005).

[46] It is remarkable that also the United Nations declared the year 2010 to be the international year of biodiversity. *See* Julia Marton-Lefèvre, *Biodiversity Is Our Life*, 327 SCIENCE 1179, *available at* http://www.sciencemag.org/content/327/5970/1179.full.pdf (Feb. 5, 2013).

[47] *See, e.g.*, Richard L. Schmalensee, *Option demand and consumer's surplus: Valuing price changes under uncertainty*, 62 AM. ECON. REV 813 (1972); Kenneth J. Arrow & Anthony C. Fisher, *Environmental Preservation, Uncertainty, and Irreversibility*, 88 Q. J. ECON. 312 (1974); David M. Kreps, *A representative theorem for 'preferences for flexibility',* 47 ECONOMETRICA 565 (1979).

[48] *See*, Stefan H. Thomke, EXPERIMENTATION MATTERS: UNLOCKING THE POTENTIAL OF NEW TECHNOLOGIES FOR INNOVATION, at 25 *et seq*. (Harvard Business School Press 2003).

possible "environmental change" and thereby solve a particular problem in the future. On the other hand, the "diversity" of approaches, in the sense of different currently employed R&D programs, can also lead to an increased probability that at least one of these current programs will be successful.

In summary, there are actually two different reasons why "diversity" can be beneficial for innovation. First, "diversity" can be of value in the sense that a variety of heterogeneous and independent sources for future innovation exists. As a consequence, consumers would benefit from this variety in the sense that there is not just one but a couple of firms which have the capability to produce future innovations in a certain field of research. This should, in analogy to the biodiversity literature, augment the probability that there is at least one firm that offers an adequate solution for a certain problem in the future. It is remarkable that especially the U.S. antitrust agencies have put forward this line of argumentation in several challenges to mergers and acquisitions.[49] In its complaint concerning the proposed acquisition of Northrop Grumman by Lockheed Martin in 1998 the DoJ argued for instance that:

> "[...] Northrop, Lockheed, and Boeing do all pursue new ideas and designs for future high performance fixed-wing military aircraft to meet specific combat needs, and these firms are the only companies that have the capabilities to compete for combined electronics system integration and military airframe upgrades. The loss of Northrop as an independent entity will reduce the number of companies to which the Department of Defence can turn to design, develop, and produce high performance fixed-wing military aircraft from three to two."[50]

Hence, the DoJ obviously highlighted the relevance of the preservation of at least three independent entities as potential innovators and thereby aimed to protect "diversity" as an important feature of competition for innovation in order to meet future combat needs.

In addition to the relevance of "diversity" as a source for future innovations in a particular field of research, the second reason why "diversity" might play a crucial role for innovation is linked to research and development efforts which are already underway. In this respect "diversity" refers to research tracks which are carried out in parallel by distinct and independent entities, entities which have different beliefs and expectations about the most promising way to achieve a certain innovation. This idea of "parallel experimentation" or "parallel research" corresponds pretty much to Joseph Farrell's Tanox-story in which he also

---

[49] *See* United States v. Lockheed Martin Corp., Civ. No. 98-00731 (D.D.C. complaint filed March 23, 1998); United States v. Halliburton Co., Civ. No. 98-2340 (D.D.C. complaint filed Sept. 29. 1998); United States v. General Dynamics Corp., Civ. No. 1:01CV02200 (D.D.C. complaint filed Oct. 23, 2001).

[50] *See* United States v. Lockheed Martin Corp., Civ. No. 98-00731 (D.D.C. complaint filed March 23, 1998), at 27.

questioned whether the abortion of the Xolair program might have been a bad decision from a consumers' point of view. Like in the case in which "diversity" is understood as a source for future innovations, the U.S. antitrust agencies also challenged a remarkable number of mergers and acquisitions in which considerations about the preservation of existing parallel research paths played an important role.[51] Thereby, the agencies argued in the majority of these merger cases that the transaction could lead to a "reduction or redirection" of research and development tracks. Hence, both the fear of a reduction as well as the suspected alignment of formerly independent research tracks can be associated with the protection of a "diversity" of research paths. Thus, in contrast to many industrial organization models in which "parallel research" is often seen as a wasteful duplication of R&D expenditures[52], "parallel research", carried out by independent entities, has to be seen more positively from this perspective. However, in the mainstream economics literature, the relationship between competition and the number of independent firms which are simultaneously undertaking R&D on the one hand and the consequential benefits for innovation on the other, plays only a minor role.

A good example which illustrates how heterogeneity and "parallel research" is considered in mainstream economics is provided by the seminal article of Raaj K. Sah and Joseph E. Stiglitz.[53] Therein the authors demonstrated that, independently of the number of firms, there will always be an efficient market equilibrium (even though smaller than the socially optimal level) of research projects from an economy-wide perspective.[54] Given a certain value of an innovation, each firm will pursue a certain number of R&D projects to optimize its probability of success in dependence of its research costs. If the number of firms decreases, the number of research projects of the remaining firms' increases and the total number of R&D projects in the market will still maximize the economy-wide probability for success. As a consequence, the number of firms pursuing research projects in parallel has no impact on the innovative performance of an industry. However, this result only holds under the strong assumptions that the firms are homogeneous (have the same capabilities to undertake R&D). The authors acknowledged that:

---

51 *See, e.g.*, American Home Products Corp., 119 F.T.C. 217 (1995); Pfizer Inc. and Warner-Lambert Co., FTC Dkt. No. C-3957 (June 19, 2000); Baxter Int'l, Inc., 123 F.T.C. 904 (1997); Ciba-Geigy Ltd., 123 F.T.C. 842 (1997); The Upjohn, Co., 121 F.T.C. 44 (1996); Glaxo plc, 119 F.T.C. 815 (1995); Glaxo Wellcome plc, 131 F.T.C. 56 (2001).

52 *See, e.g.*, Loury, *supra* note 3; Reinganum, *supra* note 3.

53 *See* Sah & Stiglitz, *supra* note 10, at 98 *et seq.*

54 *Id*.

> "[…] the probability of success of a particular project (conditional, say, on the failure of all other projects) is a function of the expenditure on that project and the expenditures on other projects, but not a function of the firms in which those other projects are undertaken."[55]

Thus, only if the firms are considered as not being different with respect to how they do business, it is irrelevant (the probability of a success innovation is unaffected) if for example two R&D projects are undertaken by two distinct firms or simply by one big firm. This, however, is an assumption which one has to doubt against an evolutionary economics background.

Hence, what is important for understanding the benefits of "diversity" is not only the consideration for uncertainty about how a certain innovation can be achieved best, but also the heterogeneity of the firms' resources and capabilities for innovation as well as their subjective opinions about the most promising way to achieve them. Thus, our notion of "diversity" corresponds very well to what Constance K. Robinson, the former director of operations and merger enforcement of the DoJ, had in mind when she stated: "Even if two firms are attempting to achieve the same goal, they will approach this effort in different ways, making different choices along the way."[56] And, most importantly: "It is a matter of judgment as to the extent that one R&D effort duplicates another, and even small differences can make one attempt successful and another a failure."[57] Hence, from this perspective, it is not sufficient that firms merely undertake multiple R&D programs in parallel because they do not know which program is suited best in order to achieve a certain innovation.[58] Instead, it is also important that these programs are carried out by different entities with different resource bases, cultures and different executives who decide about what is promising and what is not.

Nevertheless, there still remains a fundamental question. If the probability of a successful innovation also hinges on the variety of different, independent entities with unique capabilities, ideas, visions and business cultures - why should the merged entity abandon this variety? Would the merged firm not have an incentive to maintain this "diversity" in-house in

---

55 *Id*., at 106.

56 Constance K. Robinson, *Leap-frog and Other Forms of Innovation: Protecting the Future for High-Tech and Emerging Industries Through Merger Enforcement*, Address before ABA, at 2 (June 10, 1999), *available at* http://www.usdoj.gov/atr/public/speeches/2482.pdf (Nov. 7, 2012).

57 *Id*.

58 *See, e.g.*, Richard R. Nelson, *Uncertainty, Learning, and the Economics of Parallel R and D efforts*, 43 REV. ECON. STAT. 351 (1961); William J. Abernathy & Richard S. Rosenbloom, *Parallel Strategies in Development Projects*, 15 MANAGE. SCI. (10, Application Series) B486 (1969); Balaji S. Chakravarthy, *Adaption: A promising metaphor for strategic management*, 7 ACAD. MANAGE. REV. 35 (1982); Peter Moran & Sumantra Ghosal, *Markets, Firms, and the Process of Economic Development*, 24 ACAD. MANAGE. REV. 390 (1999); Thomke, *supra* note 48.

order to augment its probability of a successful innovation? Raaj K. Sah and Joseph E. Stiglitz already argued that:

> "[…] if different projects within a firm are sufficiently isolated from one another (for instance, because of the need to monitor the performance of different groups of researchers), then the firm affiliation may be less relevant."[59]

The same question can be posed with respect to the first characteristic of "diversity". If "diversity" indeed augments the probability that at least one firm has the capability to solve an unspecified problem in the future and will therefore successfully adapt to an environmental change, firms should again have an incentive to create/maintain such an environment in-house, in order to ensure their survival in the long-run.[60]

Hence, the crucial questions which have to be clarified in this respect are (1) whether firms do indeed consider the preservation of "diversity" in-house, either as a consequence of a newly created "intra-firm diversity", or because of a direct maintenance of an acquired firm's autonomy, after a merger. If our considerations about the benefits of "diversity" are correct, one would expect that we can also find respective evidence for this assumption in the more practitioner-oriented management and organizational science literature. However, in the event that we find evidence for the assumption that firms do indeed consider the creation/maintenance of "diversity", it is still not guaranteed that they will really undertake such an attempt at the end of the day. Firms might face significant trade-offs, as well as problems in line with the creation/maintenance of "diversity" in-house. Hence, (2) we want to find out whether competition authorities can rely on an increase in the "intra-firm-diversity" which would compensate for a reduction of "inter-firm-diversity", or whether they should rather expect a loss of "diversity" and some sort of alignment of formerly different approaches?

III. DIVERSITY FROM A MANAGEMENT AND ORGANIZATIONAL SCIENCE PERSPECTIVE

A. Corporate Entrepreneurship literature

The role of "diversity" for the innovativeness and general performance of firms is indeed not unknown in the field of strategic management. An important strand of literature which considers the idea of the introduced concept of "intra-firm diversity" is the Corporate

[59] Sah & Stiglitz, *supra* note 10, at 106.

[60] *See* James G. March, *Exploration and Exploitation in Organizational Learning*, 2 ORGAN. SCI. 71 (1991); Daniel A. Levinthal & James G. March, *The Myopia of Learning*, 14 STRATEG. MANAGE. J. 95 (1993).

Entrepreneurship (CE) literature. Although scholars have not reached a real consensus on exactly labeling the concept[61] (the terms vary from "intrapreneurship"[62], "internal corporate entrepreneurship"[63], "corporate venturing"[64], "new ventures"[65] and "entrepreneurial management"[66] to "strategic entrepreneurship"[67]), the common idea behind these terms can generally be summed up under the before mentioned ideational umbrella: Corporate Entrepreneurship.[68] The same holds true with respect to the objective of what CE should actually achieve. The most prominent definitions range from diversification processes[69], the transformation of ideas into collective actions[70], the encouragement for risk taking[71], the venturing of new business units[72], strategic renewal[73], the creation of new products or technologies[74], to the development of new markets[75]. However, the vast majority of the

---

61 *See* Lan Li et al., An *Empirical study of Corporate Entrepreneurship in Hospitality Companies*, 10 INT. J. HOSP. TOURISM ADM. 213 (2009); Karina S. Christensen, *A Classification of the Corporate Entrepreneurship Umbrella: Labels and Perspectives*, 1 I. J. MED. 301 (2004); Gregory G. Dess et al., *Emerging Issues in Corporate Entrepreneurship*, 29 J. MANAGE. 351 (2003).

62 *See, e.g.*, GIFFORD PINCHOT, INTRAPRENEURING: WHY YOU DON'T HAVE TO LEAVE THE CORPORATION TO BECOME AN ENTREPRENEUR, (Harper And Row, New York 1985); Camille Carrier, *Intrapreneurship in Large Firms and SMEs: A comparative Study*, 12 INT. SMALL BUS. J. 54 (1994); Camille Carrier, *Intrapreneurship in small Businesses: An exploratory Study*, 21 ENTREP. THEORY PRACT. 5 (1996); Bostjan Antoncic & Robert D. Hisrich, *Intrepreneurship: Construct Refinement and Cross-Cultural Validation*, 16 J. BUS. VENTURING 495 (2001); Lin Chinho et al., *Fuzzy Fitness model of Intrapreneurship activities or Taiwanese High-Tech Firms*, 1 I. J. MED. 45 (2003).

63 *See, e.g.*, Hans Schollhammer, *The Efficacy of Internal Corporate Entrepreneurship Strategies, in* FRONTIERS OF ENTREPRENEURSHIP RESEARCH (Karl H. Vesper eds., Wellesley/Mass, Babson College 1981); Gareth R. Jones & John E. Butler, *Managing internal Corporate Entrepreneurship: An agency theory Perspective*, 18 J. MANAGE. 733 (1992); G. T. Lumpkin & Gregory G. Dess, *Clarifying the entrepreneurial orientation construct and linking it to performance*, 21 ACAD. MANAGE. REV. 135 (1996).

64 *See* R. J. Ellis & N. T. Taylor, *Specifying Entrepreneurship, in* FRONTIERS OF ENTREPREUNERSHIP RESEARCH 527 (N. C. Churchill et al. eds., Babson College, Wellesley/Mass 1987).

65 *See* Edward B. Roberts, *New Ventures for Corporate Growth*, 58 HARVARD BUS. REV. 134 (1980).

66 *See* Howard H. Stevenson & J. Carlos Jarillo, *A Paradigm of Entrepreneurship: Entrepreneurial Management*, 11 STRATEGIC MANAGE. J. 17 (1990).

67 *See, e.g.*, Michael A. Hitt et al., *Guest Editors' Introduction to the Special Issue Strategic Entrepreneurship: Entrepreneurial Strategies for Wealth Creation*, 22 STRATEGIC MANAGE. J. 479 (2001); R. Duane Ireland et al., *Integrating Entrepreneurship and strategic management: Actions to create firm wealth*, 15 ACAD. MANAGE. EXEC. 49 (2001).

68 *See* Robert A. Burgelman, *Corporate Entrepreneurship and Strategic Management: Insights from a Process Study*, 29 MANAGE. SCI. 1349 (1983).

69 *Id*., at 1349.

70 Lai Hong Chung & Patrick T. Gibbons, *Corporate Entrepreneurship: The roles of Ideology and social Capital*, 22 GROUP ORGAN. MANAGE. 10, at 14 (1997).

71 Shaker A. Zahra, *Governance, Ownership, and Corporate Entrepreneurship: The moderating impact of industry technological opportunities*, 39 ACAD. MANAGE. J. 1713 (1996).

72 M.S. Spann et al., *Entrepreneurship: Definitions, dimensions and dilemmas*, PROCEEDINGS OF THE US ASSOCIATION FOR SMALL BUSINESS AND ENTREPRENEURSHIP 147, at 149 (1988).

73 William D. Guth & Ari Ginsberg, *Guest Editors' Introduction: Corporate Entrepreneurship*, 11 STRATEGIC MANAGE. J. 5, at 5 (1990).

74 *See* Spann et al., *supra* note 72, at 149.

75 *See* Daniel F. Jennings & James R. Lumpkin, *Functioning modeling Corporate Entrepreneurship: An empirical Integrative Analysis*, 15 J. MANAGE. 485, at 489 (1989).

definitions agree on the fact that CE aims, above all, at the enhancement of a firm's capability to generate innovations.[76] Or as Covin et al. have put it:

> "[…] innovation, broadly defined, is the single common theme underlying all forms of corporate entrepreneurship."[77]

This stems from the fact that, from a management perspective, it is widely accepted that the generation of innovation in large firms requires numerous prerequisites such as adaptability, flexibility, corporate risk-taking behavior, speed or aggressiveness.[78] As a consequence, there are various reasons why firms engage in the processes associated with CE. When established companies seek new business opportunities, they have to overcome various internal boundaries such as administrative barriers, risk aversion or organizational slack. Moreover, organizations are facing increased demands on individual products, fast-changing markets and increasing information flows. This requires a well adapting, flexible or even an entrepreneurial company.

In order to overcome these problems and to generate an environment which fosters innovation, the Corporate Entrepreneurship literature often suggests the creation of independent units which have only limited structural linkages to the organization and which therefore possess a high degree of freedom of choice.[79] Such an approach ought to combine the entrepreneurial spirit of small, independent companies with the resources of large corporations.[80] In particular, the establishment of these independent entities within a corporation is expected to be superior in the sense that it serves as a competitive advantage through the exploration of entrepreneurial opportunities and thus the generation of innovation.[81]

---

[76] *See* Elspeth McFadzean et al., *Corporate Entrepreneurship and Innovation Part 1: The missing link*, 8 E. J IM. 350 (2005).

[77] Jeffrey G. Covin & Morgan P. Miles, *Corporate Entrepreneurship and the Pursuit of Competitive Advantage*, 23 ENTREP. THEORY PRACT. 47 (1999).

[78] *See* Jennings & Lumpkin, *supra* note 75.

[79] *See* Eric von Hippel, *Successful and Failing Internal Corporate ventures: An Empirical Analysis*, 6 IND. MARKET. MANAG. 163 (1977); Morgan P. Miles & Jeffrey G. Covin, *Exploring the practice of corporate venturing: Some common forms and their organizational implications*, 26 ENTREP. THEORY PRACT. 21 (2002); Thomas Keil, *Building External Corporate Venturing Capability*, 41 J. MANAGE. STUD. 799 (2004).

[80] *See* Edwin L. Hobson & Richard M. Morrison, *How Do Corporate Start-Up Venture fare?*, *in* FRONTIERS OF ENTREPRENEURSHIP RESEARCH 390 (John A. Hornaday et al. eds., Babson Centre For Entrepreneurial Studies, Wellesley/Mass 1983).

[81] *See* Jeffrey G. Covin & Morgan P. Miles, *Corporate Entrepreneurship and the Pursuit of Competitive Advantage*, 23 ENTREP. THEORY PRACT. 47 (1999); R. Duane Ireland et al., *Conceptualizing Corporate Entrepreneurship Strategy*, 33 ENTREP. THEORY PRACT. 19 (2009); James C. Hayton, *Strategic Human Capital Management In Smes: An empirical study of Entrepreneurial Performance*, 42 HUM. RESOURCE MANAGE. 375 (2003); Todd J. Hostager et al., *Seeing environmental Opportunities: Effects of Intrapreneurial Ability, Efficacy, Motivation and Desirability*, 11 J. ORGAN. CHANGE MANAGE. 11 (1998).

In practice, Corporate Entrepreneurship can have numerous manifestations such as subsidiaries, joint-ventures, strategic alliances, business units or most recently the open-innovation approaches.[82] Nevertheless, in the context of CE, all of these organization forms share the property that they aim to foster the innovativeness of corporations by also considering the benefits of decentralization and autonomy as an important factor in order to reinvigorate the entrepreneurial spirit, behavior and capabilities within established firms. Or as Srivastava and Agrawal have put it:

> "[…] corporate entrepreneurship is basically an organisational mode, characterized by the factors of freedom and autonomy, allowing employees to innovate."[83]

Hence, the CE literature can mainly be linked to the question whether firms can be expected to (newly) create "diversity" in-house, irrespectively of their decision regarding the direct maintenance/abandonment of the firms' autonomy in a particular merger.

It is remarkable that empirical research within the Corporate Entrepreneurship Literature has discovered that CE, if applied successfully, has indeed a significant impact on firm growth[84] and their financial performance[85]. Hence, it is not surprising that many corporations engage in CE processes. Our literature review has brought to light several case studies on CE in corporations such as Philips[86], Intel and General Electric[87], FedEX[88], Sony[89], Google[90], Accordia[91], AT&T[92] or 3M[93] just to name a few. Apart from these particular company

---

82 *See* Bing-Sheng Teng, *Corporate Entrepreneurship Activities through strategic alliances: A resource-based approach toward Competitive Advantage*, 44 J. MANAGE. STUD. 119 (2007); MICHAEL H. MORRIS ET AL., CORPORATE ENTREPRENEURSHIP & INNOVATION (2nd ed., South-Western/Mason 2008).

83 Nidhi Srivastava & Anand Agrawal, *Factors supporting Corporate Entrepreneurship: An exploratory Study*, 14 J. BUS. PERSP. 163 at 165 *et seq.* (2010).

84 *See, e.g.*, Bostjan Antoncic & Robert D. Hisrich, *Intrepreneurship: Construct refinement and cross-cultural validation*, 16 J. BUS. VENTURING 495 (2001); Franz W. Kellermanns & Kimberly A. Eddleston, *Corporate Entrepreneurship in family firms: A family perspective*, 30 ENTREP. THEORY PRACT. 809 (2006).

85 *See, e.g.*, Shaker A. Zahra & Jeffrey G. Covin, *Contextual Influences on the Corporate Entrepreneurship performance relationship: A longitudinal analysis*, 10 J. BUS. VENTURING 43 (1995); Nihat Kaya, *The impact of human resource management: practices and Corporate Entrepreneurship on firm performance: Evidence from Turkish firms*, 17 INT. J. OF HUM. RESOUR. MAN. 2074 (2006).

86 *See* Simon Ford et al., *Evolving Corporate Entrepreneurship strategy: Technology incubation at Philips*, 40 R&D MANAGE. 81 (2010).

87 *See* John Zimmerman, *Corporate Entrepreneurship at GE and Intel*, 6 JBCS. 77 (2010).

88 *See* Broto R. Bhardwaj & Kirankumar S. Momaya, *Role of Organizational flexibility for Corporate Entrepreneurship: Case study of Fedex Corporation*, 7 GLOB. J. FLEX. SYSTEMS MANAGE. 37 (2006).

89 *See* Chung & Gibbons, *supra* note 70, at 12.

90 *See* Todd A. Finkle, *Corporate Entrepreneurship and innovation in silicon valley: The case of Google, Inc.*, 36 ENTREP. THEORY PRACT. 863 (2012).

91 *See* Donald F. Kuratko et al., *Improving Firm Performance Through Entrepreneurial Actions: Acordia's Corporate Entrepreneurship Strategy*, 15 ACAD. MANAGE. EXEC. 60 (2001).

92 *See* Michael H. Morris & J. Don Trotter, *Institutionalizing Entrepreneurship in a large company: A Case Study at AT&T*, 19 IND. MANKET MANAG. 131 (1990).

93 *See* Hostager et al., *supra* note 81, at 12 *et seq.*

examples, CE activity has also been reported for instance from Canadian[94], German[95], New Zealand[96] or Dutch corporations[97]. It is not even bound to highly industrialized countries, since we found examples of CE activity in China[98], Turkey[99] or Argentina[100].

However, our assessment of the Corporate Entrepreneurship literature also revealed two important limitations with respect to the implementation of CE. (1) Empirical studies showed, that the employment of CE is apparently underlying certain variations. In the 1960s and early 1970s, 25% of the Fortune 500 had a corporate venturing program. These were largely disbanded in the 1970s. By the early 1980s, the corporate venturing was put back on the spot of corporations. But again, these initiatives were discontinued after the market downturn in 1987. In the beginning of the 1990s the corporate venturing efforts were gaining momentum again and corporations have re-introduced CE activities.[101] After the dot-com bubble burst, the initiatives were reconsidered and restructured again, since many firms were dissatisfied with the outcomes of the CE practices.[102] Hence, CE seems to depend upon some kind of zeitgeist. (2) Even though several studies reported that some firms were remarkably rewarded after successfully relying on a CE strategy, other empirical studies which focused on the overall success rate of applied CE programs delivered much less promising results. Strebel, for instance, discovered that the success rates of corporate reengineering in Fortune 1000 companies are solely between 20 and 50%[103] and comparable observations lead Morris et al. to make the following disillusioning statement:

> "The disappointment […] reflects the fact that many companies are not very good at corporate venturing, or creating new businesses within their existing business."[104]

---

94 *See* Erik G. Rule & Donald W. Irwin, *Fostering Intrapreneurship: The new competitive edge*, 9 IJBS. 44 (1988).

95 *See* Ralf Schmelter et al., *Boosting Corporate Entrepreneurship through HRM practices: Evidence from German SMES*, 49 HUM. RECOURCE MANAGE. 715 (2010).

96 *See* Jarrod M. Haar & Brook J. White, *Corporate Entrepreneurship and information technology towards employee retention: A study of New Zealand firms*, 23 HUMAN RESOURCE MANAGEMENT JOURNAL 109 (2013).

97 *See* Bruce H. Kemelgor, *A comparative analysis of Corporate Entrepreneurial orientation between selected firms in the Netherlands and the USA*, 14 ENTREP. REGION DEV. 67 (2002).

98 *See* Zhe Zhang & Ming Jia, *Using social exchange theory to predict the effects of High-Performance Human Resource practices on Corporate Entrepreneurship: Evidence from China*, 49 HUM. RESOURCE MANAGE. 743 (2010).

99 *See* Kaya, *supra* note 85, at 2074 *et seq.*

100 *See* SERGIO POSTIGO, CORPORATE ENTREPRENEURSHIP: AN EXPLORATORY RESEARCH IN ARGENTINA (Universidad de San Andrés 2002).

101 *See* Henry Chesbrough, *Designing corporate ventures in the shadow of private venture capital*, 42/3 CALIF. MANAGE. REV. 31 (2000).

102 *See* Morris et al., *supra* note 82, at 95.

103 *See* Paul Strebel, *Why do Employees Resist Change?* 74 HARVARD BUS. REV. 86 (1996).

104 *See* Morris et al., *supra* note 82, at 87.

This relatively poor performance might be caused by the fact that CE requires that it is embedded in the appropriate organizational environment. Such a CE-friendly environment can be characterized by the proper interplay of several factors which can be assigned to the following five main categories: organizational structure[105], corporate culture[106], human resource management[107], corporate strategy[108] and extern factors[109] (based on Morris and

[105] *See* Srivastava & Agrawal, *supra* note 83, at 165 *et seq.;* GARETH R. JONES, ORGANIZATIONAL THEORY, DESIGN, AND CHANGE (5th ed. Prentice Hall 2006); Robert D. Russell & Craig J. Russel, *An examination of the effects of organizational norms, organizational structure and environmental uncertainty on entrepreneurial strategy*, 18 J. MANAGE. 639 (1992); Dennis H. Ferguson et al., *Intrapreneuring in hospitality organizations*, 6 INT. J. HOSP. MANAG. 23 (1987); Bhardwaj & Kirankumar et al., *supra* note 88, at 132 *et seq.;* Jeffrey S. Hornsby et al., *Middle managers' perception of the internal environment for Corporate Entrepreneurship: Assessing a measurement scale*, 17 J. BUS. VENTURING 253 (2002); Daniel F. Jennings & Samuel L. Seaman, *Aggressiveness of response to new business opportunities following deregulation: An empirical study of established financial firms*, 5 J. BUS. VENTURING 177 (1990); Allan Gibb, *Corporate restructuring and entrepreneurship: What can large organizations learn from Small?*, 1 IJEIMS. 19 (2000); James B. Quinn, *Managing innovation: Controlled chaos*, 63 HARVARD BUS. REV. 73 (1985); JOHN NAISBITT, GLOBAL PARADOX (Nicholas Brealey Publishing, London 1994).

[106] *See* JERALD GREENBERG & ROBERT A. BARON, BEHAVIOR IN ORGANIZATIONS (Prentice Hall 1997); Mark N. Clemente & David S. Greenspan, Culture Clashes, 16 EXECUTIVE EXCELLENCE 12 (1999); Golnaz Sadri & Brian Lees, *Developing corporate culture as a competitive advantage*, 20 J. MANAGE. DEV. 853 (2001); Chung & Gibbons, *supra* note 70, at 18 *et seq.;* Jeffrey G. Gown, *Entrepreneurial versus conservative firms: A comparison of Strategies and Performance*, 28 J. MANAGE. STUD. 439 (1991); Rosabeth M. Kanter, *When a thousand flowers bloom: Structural, social and collective conditions for innovation organizations, in* 10 RESEARCH IN ORGANIZATIONAL BEHAVIOR 169 (Barry M. Staw & Larry L. Cummings eds., Greenwich 1988); Michael H. Morris et al., *Individualism and the modern Corporation: Implications for Innovation and Entrepreneurship,* 19 J. MANAGE. 595 (1993); Morris & Trotter , *supra* note 92, at 133 *et seq.;* Bhardwai & Momaya , *supra* note 88, at 41 *et seq.;* Ferguson et al., *supra* note105, at 27 *et seq.*

[107] *See* MARK A. HUSELID ET AL., THE WORKFORCE SCORECARD: MANAGING HUMAN CAPITAL TO EXECUTE STRATEGY (Boston/Mass, Harvard Business School Press 2005); Sully Taylor et al., *Guest Editors' Introduction: Introduction to HRM's role in sustainability: Systems, strategies, and practices*, 51 HUM. RESOURCE MANAGE. 789 (2012); Judith W. Tansky et al., *What's Next? Linking entrepreneurship and Human Resource Management in Globalization*, 49 HUM. RESOURCE MANAGE. 689 (2010); Schmelter et al., *supra* note 95, at 716 *et seq.;* Daniel T. Holt et al., *Corporate Entrepreneurship: An empirical look at individual characteristics, context, and process,* 13 J. LEADER ORGAN. STUD. 40, at 43 *et seq.* (2007); Hornsby et al., *supra* note 105, at 253 *et seq*; Hostager et al., *supra* note 81, at 16 *et seq.*; Miri Lerner, *The Role of Compensation Methods in Corporate Entrepreneurship* 39 INT. STU. OF MANAGE. 53 (2009); Hayton., *supra* note 81, at 377 *et seq.;* Kaya, *supra* note 85, at 2078 *et seq.;* Melissa S. Cardon, *Is passion contagious? The transference of Entrepreneurial passion to employees*, 18 HUM. RESOUR. MANAGE. R. 77 (2008); Ferguson et al., *supra* note 105, at 29 *et seq.*, Morris & Trotter, *supra* note 92, at 136 *et seq.;* Gordon R. Foxall & Aron L. Minkes, *Beyond Marketing: The diffusion of entrepreneurship in the modern corporation*, 4 J. STRAT. MARKET 71 (1996); Terrence C. Sebora, et al., *Corporate entrepreneurship in the face of changing competition: A case analysis of six Thai manufacturing firms*, 23 J. ORGAN. CHANGE MANAGE. 453 (2010).

[108] *See* RICHARD P. RUMELT, STRATEGY, STRUCTURE, AND ECONOMIC PERFORMANCE (Cambridge/Mass, Harvard University Press 1974); Bruce R. Barringer & Allen C. Bluedorn, *The relationship between Corporate Entrepreneurship and Strategic Management*, 20 STRATEGIC MANAGE. J. 421 (1999); JEROEN DE JONG, INDIVIDUAL INNOVATION: THE CONNECTION BETWEEN LEADERSHIP AND EMPLOYEE'S INNOVATIVE WORK BEHAVIOUR (Zoetermeer, Scales Research Reports from EIM Business and Policy Research 2007); Srivastava & Agrawal., *supra* note 83 at 168 *et seq.*; RICHARD L. DAFT ET AL., ORGANIZATION THEORY AND PRACTICE (Cengage/Hampshire 2010); Jennings & Seaman, *supra* note 105; Shaker A. Zahra et al., *Entrepreneurship in medium-size companies: Exploring the effects of ownership and governance systems*, 26 J. MANAGE. 947 (2000); Hornsby et al., *supra* note 105, at 254 *et seq.*; Ferguson et al., *supra* note 105 at 26 *et seq.;* Zahra, *supra* note 71, at 1714 *et seq*.; Zahra & Govin,, *supra* note 85 at 46 *et seq.*

[109] *See* Argyro Nikiforou et al., *The impact of networks on corporate entrepreneurship: lost in the structural holes*, 31 FR. ENTREP. RESEARCH 15 (2011); Dirk Miller et al., *Strategic process and content as mediators between organizational context and structure*, 31 ACAD. MANAGE. J. 554 (1988); Ana M. Romero-Martinez

Trotter[110], Srivastava and Agrawal[111], and Ireland et al.[112]). Hence, besides the extremely unlikely case in which a firm possesses such a CE-friendly environment automatically, it has to change its organizational structure, corporate culture, human resource management and corporate strategy in order to ensure a successful implementation of CE. As a consequence, it can be concluded that the willingness and ability to successfully change these factors towards a CE-friendly environment will, at the end of the day, also determine whether the implementation of CE will be successful or not. However, apart from the fact that the modification of the external factors is outside the scope of the firm, the attempt of changing the remaining internal factors is an ambitious and very risky undertaking. Beside the worrisome findings of Sirkin et al., who discovered that two out of every three transformation programs fail[113], it was furthermore observed that firms are generally very reluctant with respect to attempts on organizational change (even though these changes are expected to improve their performance).[114] This phenomenon, often called "structural inertia"[115], is remarkable at first sight. However, Massimo Colombo and Marco Delmastro provided a comprehensive overview on explanations why firms might avoid any attempt of organizational change.[116] In the population ecology literature, for example, it is argued that stable organizations with standardized routines create an environment of reliability and accountability - two properties that can also constitute an advantage in the evolutionary process of variation and selection.[117] If this is the case, it would imply that many firms which have remained in saturated industries most likely possess a stable organizational structure which is rather resistant to change. By assuming bounded rationality of economic agents and

---

et al, *Exploring corporate entrepreneurship in privatized firms,* 45 J. WORLD BUS. 2 (2010); Guth & Ginsberg, *supra* note 73, at 7 *et seq.;* Zahra & Govin, *supra* note 85, at 48 *et seq.;* E. RALPH BIGGADIKE, CORPORATE DIVERSIFICATION: ENTRY, STRATEGY AND PERFORMANCE. BOSTON: DIVISION OF RESEARCH, (Harvard University. 1976); P.P. McDougall & R.B. Robinsion, *New venture performance: Patterns of strategic behavior in different industries, in* FRONTIERS OF ENTREPRENEURSHIP RESEARCH 447 (B. A. Kirchhoff et al. Eds, Wellesley, MA: Babson College., 1988); W. R. Sandberg, & C. W., Hofer, *Improving new venture performance: The role of strategy, industry structure, and the entrepreneur,* 2 J. BUS. VENTURING 5 (1987); Ravi Kathuria & Joshi, P. Maheshkumar, *Environmental influences on corporate entrepreneurship: executive perspectives on the internet*, 3 INT. ENTREP. MANAG. J. 127 (2007); PETER KILBY, ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT (New York: The Free Press, 1971); C.A. KENT, THE ENCYCLOPEDIA FOR ENTREPRENEURSHIP (Lexington, MA, 1984); Minet Schindehutte et al., *Triggering events, corporate entrepreneurship and the marketing function*, 8 JMTP. 18 (2000).

110 *See* Morris & Trotter, *supra* note 92, at 132 *et seq.*

111 *See* Srivastava & Agrawal, *supra* note 83.

112 *See* Ireland et al., *supra* note 81, at 21 *et seq*.

113 *See* Harold L. Sirkin et al., *The hard side of change management,* 83 HARVARD BUS. REV. 109 at 112 (2005).

114 *See* Massimo G. Colombo & Marco Delmastro, *The Determinants of Organizational Change and Structural Inertia: Technological and Organizational Factors,* 11 J. ECON. MANAGE. STRAT. 595, at 596 (2002).

115 *See* JOHN P. KOTTER, LEADING CHANGE (Harvard Business Review Press 1996); Colombo & Delmastro, *supra* note 114, at 596.

116 *See* Colombo & Delmastro, *supra* note 114.

117 *See* Michael T. Hannan & John Freeman, *Structural Inertia and Organizational Change*, 49 AM. SOCIOL. REV. 149 (1984); Colombo & Delmastro, *supra* note 114, at 596 *et seq*.

decision making costs as a consequence of uncertainty, another explanation of this phenomenon was brought forward by the behavioralist theorists of organizations.[118] Since, under such a setting, there is no guaranty that a change of the organizational structure will be successful, firms often prefer to stick to their current structure, until a very poor performance forces them to change.[119] Yet another approach in order to explain the phenomenon of "structural inertia" can be found in the necessity to effectively monitor subordinates.[120] The larger a firm's size, the more levels of hierarchies can be needed in order to ensure a contracted level of effort and working morale of employees.[121] Especially firms, operating in stable markets, often face a trade-off between a strong focus on cost reduction by relying on a clearly structured, highly hierarchical and effective organization and a rather entrepreneurial focus by relying on decentralization. Hence, there seems to arise a conflict with respect to the creation of the appropriate environment for corporate entrepreneurship on the one side and considerations relating to stability and cost efficiency on the other. This interpretation is further supported by the observation of Morris & Trotter who argue that:

> "There is, in fact, a natural tendency for companies to lose the entrepreneurial spirit, and build internal constraints on entrepreneurship, as they evolve through the organizational life cycle."[122]

And:

> "These systems seek to provide stability, order, and coordination to an increasingly complex internal corporate environment. The trade-off, however, is a strong disincentive for entrepreneurship."[123]

B. The Ambidextrous Organization

This trade-off is also the essential component of the literature in connection with the idea of an ambidextrous organization.[124] In this regard, the term ambidexterity, which originally stands for bi-manual, refers to a firm's capability to successfully combine and balance

---

[118] *See* JAMES G. MARCH & HERBERT SIMON, ORGANIZATIONS (Wiley 1958); RICHARD M. CYERT & JAMES G. MARCH, A BEHAVIORAL THEORY OF THE FIRM (Englewood Cliffs 1963); Colombo & Delmastro, *supra* note 114, at 596.

[119] *See* Colombo & Delmastro, *supra* note 114, at 596.

[120] *See* Oliver E. Williamson, *Hierarchical Control and Optimum Firm Size*, 75 J. POLIT. ECON. 123 (1967); Colombo & Delmastro, *supra* note 114, at 600.

[121] *See* Yingyi Qian, *Incentives and loss of control in an Optimal Hierarchy*, 61 REV. ECON. STUD. 527 (1994); Colombo & Delmastro, *supra* note 114, at 600.

[122] Morris & Trotter, *supra* note 92, at 132.

[123] *Id*., at 134.

[124] *See* Robert B. Duncan, *The Ambidextrous Organization, Designing Dual Structures for Innovation*, *in* THE MANAGEMENT OF ORGANIZATION DESIGN: STRATEGIES AND IMPLEMENTATION 167 (Ralph H. Kilmann, Louis R. Pondy, Dennis P. Slevin eds., North Holland 1976).

exploration and exploitation strategies.[125] That is to say, that a firm, in order to secure its long-term success, has to manage both, the exploitation of its current resources and competitive advantages, as well as the exploration of new business opportunities, new resources and the generation of innovations.[126] However, this requires that firms, on the one hand, have to focus on the improvement of existing routines, structures and technologies in order to realize efficiency gains, quality advantages as well as incremental innovations, and, on the other hand, have to explore the technological search space in order to generate innovations and to find new business opportunities.[127]

To find a balance between these two goals is apparently not an easy undertaking, since many companies have difficulties in pursuing both strategies in parallel (mostly leading them to a dominant focus on exploitation).[128] Based on these observations, some scholars consequently suspected that there has to be some kind of unavoidable trade-off between exploitation and exploration activities.[129] Authors who referred to the nature of this trade-off

---

[125] *See* March, *supra* note 60; Levinthal & March, *supra* note 60; Julian Birkinshaw & Cristina B. Gibson, *Building Ambidexterity Into an Organization*, 46 MIT SLOAN MANAGE. REV. 47 (2004); Justin J. P. Jansen et al., *Exploratory Innovation, Exploitative Innovation, and Performance: Effects of Organizational Antecedents and Environmental* Moderators, 52 MANAGE. SCI. 1661 (2006); Charles A. O'Reilly III & Michael L. Tushman, *The Ambidextrous Organization*, 82 HARVARD BUS. REV. 74 (2004).

[126] *See* March, *supra* note 60; Mary J. Benner, & Michael L. Tushman, *Exploitation, Exploration and Process Management: The Productivity Dilemma Revisited*, 28 ACAD. MANAGE. REV. 238 (2003); Charles A. O'Reilly III & Michael L. Tushman, *Ambidexterity as a Dynamic Capability: Resolving the Innovator's Dilemma*, 28 RES. ORGAN. BEHAV. 185 at 189 (2008).

[127] Björn Hobus & Michael W. Busch, *Organizational Ambidexterity*, 71 DIE BETRIEBSWIRTSCHAFT 189, at 189 (2011).

[128] *See, e.g.*, WILLIAM J. ABERNATHY, THE PRODUCTIVITY DILEMMA: ROADBLOCK TO INNOVATION IN THE AUTOMOBILE INDUSTRY (Baltimore, Johns Hopkins University Press 1978); CLAYTON M. CHRISTENSEN, THE INNOVATOR'S DILEMMA: WHEN NEW TECHNOLOGIES CAUSE GREAT FIRMS TO FAIL (Boston, Harvard Business School Press 1997); Clayton M. Christensen & Joseph L. Bower, *Customer Power, Strategic Investment, and the Failure of Leading Firms*, 17 STRATEG. MANAGE. J. 197 (1996); Glenn R. Carroll & Albert C. Y. Teo, *Creative Self-Destruction Among Organizations: An Empirical Study of Technical Innovation and Organizational Failure in the American Automobile Industry, 1885-1981*, 5 IND. CORP. CHANGE 619 (1996); Pino G. Audia et al., *The Paradox of Success: An Archival and a Laboratory Study of Strategic Persistence Following Radical Environmental Change*, 43 ACAD. MANAGE. J. 837 (2000); James G. March, *Understanding Organisational Adaptation*, 25 SOCIETY AND ECONOMY 1, at 5 (2003); Charles W. L. Hill & Frank T. Rothaermel, *The Performance of Incumbent Firms in the Face of Radical Technological Innovation*, 28 ACAD. MANAGE. REV. 257 (2003); ANDREW CAMPBELL & ROBERT PARK, THE GROWTH GAMBLE: WHEN LEADERS SHOULD BET BIG ON NEW BUSINESSES AND HOW TO AVOID EXPENSIVE FAILURES (London and Naperville, Nicholas Brealey Publishing 2005); Sebastian Raisch & Florian Hotz, *Shaping the Context for Learning: Corporate Alignment Initiatives, Environmental Munificence and Firm Performance*, *in* STRATEGIC RECONFIGURATIONS: BUILDING DYNAMIC CAPABILITIES IN RAPID INNOVATION-BASED INDUSTRIES 62, at 65 (Stuart Wall ed., Cheltenham, Edward Elgar Publishing 2010).

[129] *See, e.g.*, JAMES D. THOMPSON, ORGANIZATIONS IN ACTION: SOCIAL SCIENCE BASES OF ADMINISTRATIVE THEORY (New Brunswick, Transaction Publishers 1967); Abernathy, *supra* note 128; Benner & Tushman, *supra* note 126; Christensen, *supra* note 128; March, *supra* note 60; Levinthal & March, *supra* note 60; Michael L. Tushman & Charles A. O'Reilly III (1996), *Ambidextrous Organizations: Managing Evolutionary and Revolutionary Change*, 38 CALIF. MANAGE. REV. 8 (1996); David J. Teece et al., *Dynamic Capabilities and Strategic Management*, 18 STRAT. MGMT. J. 509 (1997); Paul S. Adler et al., *Flexibility versus Efficiency? A Case Study of Model Changeovers in the Toyota Production System*, 10 ORGAN. SCI. 43 (1999); Willow A. Sheremata, *Centrifugal and Centripetal Forces in Radical New Product Development Under Time Pressure*, 25 ACAD. MANAGE. REV. 389 (2000).

depicted e.g. that pursuing either an exploitation - or exploration strategy requires fundamentally opposing sets of roles, incentives, culture and competences which hardly fit together within the same entity.[130] In particular, explorative activities are considered as processes which succeed by experimenting and should therefore be carried out in small and decentralized units.[131] Exploitation, however, requires rather large and centralized entities with tight cultures and processes.[132] Benner & Tushman stated moreover, that even the diffusion of process management techniques as "Total Quality Management" (TQM), "Six Sigma" or the "International Organization for Standardization's Series 9000" (ISO 9000) promoted exploitative innovations at the expense of explorative innovations, thereby indicating that both activities indeed cannot coexist in the same business unit.[133] As a consequence, closely tied to the question relating to the compatibility of exploitation and exploration is the question with respect to the appropriate organizational structure for simultaneously pursuing these strategies on a corporate level. As a solution to this trade-off, some authors proposed to separate these activities from one another, whereas "[…] the tasks, culture, individuals, and organizational arrangements are consistent [within subunits], but across subunits tasks and cultures are inconsistent and loosely coupled".[134] Hence, the separation of the units with explorative tasks from the parent firm, and therefore also the degree of decentralization, in terms of organizational structure and autonomy, is often understood as the key element of success for achieving ambidexterity. This creation of separate structures for exploration and exploitation within one firm became known as structural ambidexterity.[135] Others, however, consider these strategies as basically compatible, providing that they are pursued within an adequate organizational design.[136] This approach, often called contextual ambidexterity, focuses on individuals to make choices between exploitation and exploration oriented tasks.[137] Consequently, employees are expected to

[130] *See* Michael L. Tushman et al., *Organizational Designs and Innovation Streams*, 19 IND. CORP. CHANGE. 1331, at 1335 (2010).
[131] *See* Benner & Tushman, *supra* note 126, at 247; O'Reilly III & Tushman, *supra* note 126, at 189; Nicolaj Siggelkow & Daniel A Levinthal, *Temporarily Divide to Conquer: Centralized, Decentralized, and Reintegrated Organizational Approaches to Exploration and Adaptation*, 14 ORGAN. SCI. 650 (2003).
[132] *See* Benner & Tushman, *supra* note 126, at 247.
[133] *Id.*, at 239.
[134] *Id.*, at 247.
[135] *See* Adler et al., *supra* note 129; Edward F. McDonough & Richard Leifer, *Using Simultaneous Structures to Cope with Uncertainty*, 26 ACAD. MANAGE. J. 727 (1983).
[136] *See* Anil K. Gupta et al., *The Interplay Between Exploration and Exploitation*, 49 ACAD. MANAGE. J. 693, at 695 (2006); Cristina B. Gibson & Julian Birkinshaw, *The Antecedents, Consequences and Mediating Role of Organizational Ambidexterity*, 47 ACAD. MANAGE. J. 209, at 221 (2004).
[137] *See* Gibson & Birkinshaw, *supra* note 136; Ian P. McCarthy & Brian R. Gordon, *Achieving Contextual Ambidexterity in R&D Organizations: A Management Control System Approach*, 41 R&D MANAGE. 240 (2011).

divide their work time according to the two activities so that they can also experiment with breakthrough ideas.

Hence, this general tension between exploitation and exploration, which is deemed to determine a firm's long-term success, provides the theoretical background for the following analysis of the firms' incentives to maintain "diversity" in-house post-merger. While Corporate Entrepreneurship can be considered as an approach which reconciles exploitation and exploration strategies through the creation of independently operating business-units for exploration purposes[138], the post-merger literature can be linked to the question whether firms consider the direct maintenance of a target firm's autonomy post-merger. Therefore, in the following we will analyze the post-merger integration literature in order to find out how and to what extent the preservation of "diversity" is considered against this background.

C. Post-merger integration literature

The literature on post-merger integration is familiar with the problem that the merging parties have to decide whether they want to exploit the newly gained resources and assets by structural integration or whether they should rather maintain the autonomy of the firms in order to enable continued innovation.[139] In this context, structural integration is understood as: "[…] the alignment and standardization of processes and systems, common hierarchical control, cross-unit teams, and integrating managers […].[140] It is argued that integration can benefit exploitation by offering substantial potential for synergies by realizing e.g. economies of scale and scope[141], or by improving a firm's capability to turn inventions into innovations.[142] This improvement can be explained by an enhanced coordination through e.g. common processes, authority and incentive systems, as well as informal communication channels, a common language, group conventions and group identity.[143] However, it is also

---

[138] *See* Max Keilbach & Mark Sanders, *Exploration and Exploitation: The Role of Entrepreneurship and R&D in the Process of Innovation*, 108 JENA ECONOMIC RESEARCH PAPERS (2007), *available at* http://hdl.handle.net/10419/25680 (Okt. 14, 2013).

[139] *See* PHILIPPE C. HASPESLAGH & DAVID B. JEMISON, MANAGING ACQUISITIONS: CREATING VALUE THROUGH CORPORATE RENEWAL (New York, Free Press 1991); Phanish Puranam et al., *Organizing for Innovation: Managing the Coordination-Autonomy Dilemma in Technology Acquisitions*, 49 ACAD. MANAGE. J. 263 (2006).

[140] Puranam et al., *supra* note 139 at 264.

[141] *See* Constance E. Helfat & Kathleen M. Eisenhardt, *Inter-Temporal Economies of Scope, Organizational Modularity, and the Dynamics of Diversification*, 25 STRATEG. MANAGE. J. 1217 (2004).

[142] *See* Shona L. Brown & Kathleen M. Eisenhardt, *Product Development: Past Research, Present Findings, and Future Directions*, 20 ACAD. MANAGE. REV. 343 (1995); Shaker A. Zahra & Anders P. Nielsen, *Sources of Capabilities, Integration and Technology Commercialization*, 23 STRATEG. MANAGE. J. 377 (2002).

[143] *See* Puranam et al., *supra* note 139 at 265; Bruce Kogut & Udo Zander, *What Firms Do? Coordination, Identity, and Learning*, 7 ORGAN. SCI. 502 (1996); Herminia Ibarra, *Network Centrality, Power, and Innovation Involvement: Determinants of Technical and Administrative Roles*, 36 Acad. Manage. J. 471

acknowledged that structural integration can disrupt a firms' capability for continued innovation which would therefore be detrimental for exploration strategies.[144] Benner & Tushman[145] as well as Ranft & Lord[146], among others, pointed out that integration will inevitably alter the organizational routines and processes of the acquired firm (by making it similar to the acquirer), which will consequently lead to a loss of the firm's identity and can diminish its capabilities to innovate.[147]

Thus, whilst centralization, control and structural integration is mostly understood as being beneficial for the exploitation of current resources,[148] decentralization and autonomy are often expected to be favorable for pursuing an exploration strategy.[149] As possible solutions to this "coordination-autonomy dilemma"[150], the literature basically offers two different approaches. Firstly, some authors proposed that an acquired firm could initially maintain its autonomy until it is integrated into the acquiring firm at a later point in time.[151] However, the major shortcoming of these proposals is that the date, by which the acquired firm ought to be integrated, remains unspecified. Secondly, Puranam, Singh & Zollo[152] recently offered an approach that relies on the progress of the underlying technological trajectory.[153] In order to avoid any disturbance of its innovative capacity, the authors proposed that an acquiring firm should refrain from integrating the target firm when it is situated at the beginning of a

---

(1993); Colin F. Camerer & Marc Knez, *Coordination, Organizational Boundaries and Fads in Business Practices*, 5 IND. CORP. CHANGE 89 (1996).

144 *See* Haspeslagh & Jamison, *supra* note 139 at 148; Annette L. Ranft & Michael D. Lord, *Acquiring New Technologies and Capabilities: A Grounded Model of Acquisition Implementation*, 13 ORGAN. SCI. 420 (2002); PHANISH PURANAM, GRAFTING INNOVATION: THE ACQUISITION OF ENTREPRENEURIAL FIRMS BY ESTABLISHED FIRMS (Ann Arbor, University Microfilms International 2001).

145 *See* Benner & Tushman, *supra* note 126.

146 *See* Ranft & Lord, *supra* note 144.

147 *See* Puranam et al., *supra* note 139 at 265; Haspeslagh & Jamison, *supra* note 139 at 148.

148 *See* Raisch & Hotz, *supra* note 128 at 65; Puranam et al., *supra* note 139 at 264; Duncan, *supra* note 124; ROBERT E. QUINN & KIM S. CAMERON, PARADOX AND TRANSFORMATION: TOWARD A THEORY OF CHANGE IN ORGANIZATION AND MANAGEMENT (Cambridge, Ballinger Publishing 1988).

149 *See* Raisch & Hotz, *supra* note 128 at 65; KARL E. WEICK, THE SOCIAL PSYCHOLOGY OF ORGANIZING (Random House 1979); STEVEN C. WHEELWRIGHT & KIM B. CLARK, REVOLUTIONIZING PRODUCT DEVELOPMENT: QUANTUM LEAPS IN SPEED, EFFICIENCY, AND QUALITY (Free Press 1992); CLAYTON M. CHRISTENSEN & MICHAEL E. RAYNOR, THE INNOVATOR'S SOLUTION: CREATING AND SUSTAINING SUCCESSFUL GROWTH (Boston, Harvard Business School Press 2003); RICHARD LEIFER ET AL., RADICAL INNOVATION: HOW MATURE COMPANIES CAN OUTSMART UPSTARTS (Boston, Harvard Business School Press 2000); Constantinos Markides, *Strategic Innovation in Established Companies*, 39 MIT SLOAN MANAGE. REV. 31 (1998).

150 *Id.*

151 *See* Julian Birkinshaw et al., *Managing The Post-Acquisition Integration Process: How the Human Integration and Task Integration Processes Interact to Foster Value Creation*, 37 J. MANAGE. STUD. 395 (2000); Haspeslagh & Jemison, *supra* note 139; Ranft & Lord, *supra* note 144.

152 *See* Puranam et al., *supra* note 139.

153 *See* Giovanni Dosi, *Technological paradigms and Technological Trajectories: A Suggested Interpretation of the Determinants and Directions of Technical Change*, 11 RES. POLICY 147 (1982); Sidney G. Winter, *Schumpeterian Competition in Alternative Technological Regimes*, 5 J. ECON. BEHAV. ORGAN. 287 (1984).

technological trajectory.[154] However, whenever the technological paradigm appears to be in an already advanced stage, the negative consequences of structural integration were considered as less harmful.[155]

As a consequence, the arguments in favor of maintaining autonomy correspond very well to both aspects of our concept of "intra-firm diversity". On the one hand it can be understood as an attempt to secure "diversity" in the sense of business units as independent sources for the generation of innovations and the identification of new business opportunities. On the other hand it is also in line with our second notion of "diversity" which focused on enabling an acquired entity to continue with its current innovation efforts without being influenced and interrupted by the acquirer and to avoid an alignment of so far different R&D tracks.

However, even though considerations about the benefits of "intra-firm diversity", by relying on autonomy for exploration purposes, apparently play a substantial role for scholars and practitioners who work in the field of post-merger integration, there are still significant incentives for structural integration in order to exploit current resources. This holds particularly true for large transactions. Since the majority of the contributions cited in this chapter on post-merger integration dealt with technology acquisitions of small innovative firms, the opportunity costs of preserving a target firm's autonomy can be expected to be comparatively low. However, the larger the transaction, the higher is the potential to benefit from the exploitation of the newly gained resources and to achieve economies of scope. As a consequence, it is questionable whether private and social incentives (measured in consumer welfare) about the preservation of "diversity" after a merger do always coincide. This holds particularly true, whenever the benefits from exploiting the target firm are not passed on to consumers in the form of price-cuttings or significant product improvements, but become manifest predominantly in an increase in the firm's profits. Hence, there can emerge situations in which an acquirer prefers structural integration and thus the exploitation of the target firm in order to increase its current profits, while consumers would favor to maintain the acquired firm's autonomy in order to uphold the capacity for the generation of innovations. Besides this, March furthermore suspected that: "[E]stablished organizations will always specialize in exploitation, in becoming more efficient in using what they already know".[156] And O'Reilly & Tushman added: "In contrast, returns to exploration are more uncertain, more distant in time, and sometimes a threat to existing organizational units".[157]

[154] *See* Puranam et al., *supra* note 139.
[155] *Id.*
[156] March, *supra* note 128 at 14.
[157] O'Reilly III & Tushman, *supra* note 126 at 189.

These doubts are further reinforced by empirical studies which generally analyzed the impact of mergers and acquisitions on innovation. Even though these studies do not explicitly consider the impact of autonomy/integration on innovation, their findings still give food for thought. In their survey article on the empirical literature regarding the impact of M&A on the post-merger innovativeness of firms, De Man and Duysters[158] could not find any significant positive effect of mergers and acquisitions on the innovativeness of the respective firms. The explanations put forward in line with this phenomenon vary from an assumed scarcity of financial resources for R&D as a consequence of the executed transaction[159], integration problems[160], to an overestimation of short-term financial targets over long-term strategic goals by managers[161]. However, besides this, it can also be suggested that the observed negative effects of mergers on innovation stem, at least to some extent, also from an inordinate focus on exploitation strategies which sacrifice autonomy, and thereby the innovative capacity of the acquired firm, to structural integration.

IV. CONCLUSION

It is outstanding that many scholars, who can be associated with the disciplines of strategic management and organizational science, are obviously highly interested in the impact of a decentralized organizational structure and autonomy on the innovativeness and general performance of firms. Thus, the extensive literature analyzed in this article indicates above all that decentralized and independently operating business units, which possess a wide scope of decision-making and action as well as responsibility for their own budget, indeed foster innovation. Therefore, it can be derived that "diversity", irrespective of the fact whether it can be found in-house or in the competition process among firms, apparently matters.

Based on the richness of the introduced literature one might thus conclude that even merged entities should have an incentive to create/maintain "diversity" in-house and thereby balance a merger induced reduction of "inter-firm-diversity" by an increased "intra-firm-diversity". However, we also discovered that the creation of "intra-firm-diversity" is a very

---

158 *See* Ard-Pieter De Man & Geert Duysters, *Collaboration and Innovation: A Review of the Effects of Mergers, Acquisitions and Alliances on Innovation*, 25 TECHNOVATION 1377 (2005).

159 *See* Michael A. Hitt et al., *The Market for Corporate Control and Firm Innovation*, 39 ACAD. MANAGE. J. 1084, at 1089 (1996); Bronwyn H. Hall et al., *The Impact of Corporate Restructuring on Industrial Research and Development*, 3 BROOKINGS PAP. ECO. AC. 85 at 113 (1990).

160 *See* Wesley M. Cohen & Daniel A. Levinthal, *Innovation and Learning: The two Faces of R&D*, 99 ECON. J. 569 (1989); Ashish Arora & Alfonso Gambardella, *Complementarity and External Linkages: The Strategies of the Large Firms in Biotechnology*, 38 J. IND. ECON. 361 (1990); Udo Zander & Bruce Kogut, *Knowledge and the Speed of the Transfer and Imitation of Organizational Capabilities: An Empirical Test*, 6 ORAN. SCI. 76 (1995); Teece et al., *supra* note 129.

161 *See* Andrew D. James et al., *Integrating Technology into Merger and Acquisition Decision Making*, 18 TECHNOVATION 563 at 566 (1998).

ambitious undertaking which demands that numerous requirements are fulfilled and which furthermore often tends to fail. Besides this, we depicted that the preservation of "diversity", either as a consequence of a newly created "intra-firm diversity", or because of a direct maintenance of an acquired firm's autonomy, cannot be realized without (opportunity) costs. Hence, the firms will most likely face a trade-off between the creation/maintenance of "diversity" for the improvement of their innovative capacity on the one hand and integration and centralization for the exploitation of current resources and the realization of cost-saving potentials on the other. As a result, we can neither conclude that the degree of "diversity", which existed before a certain merger takes place, will inevitably get lost, nor that it will definitely be upheld post-merger. However, apart from the difficulties in line with the creation of "diversity" in-house, we also found evidence that firms tend to have a predominant focus on exploitation goals at the expense of exploration objectives. Hence, we have good reason to reject the presumption that merging firms will definitely preserve an efficient level of "diversity" post-merger.

What conclusions can be drawn from a competition policy perspective? Does the fact that the successful implementation of "intra-firm-diversity" is apparently not an easy task and that firms tend to overvalue exploitation objectives provide ample reasons for an intervention of antitrust agencies in the review process of mergers? Can mergers and acquisitions themselves not be understood as a process of experimentation on an organizational level and therefore as an inherent part of the overall evolutionary process of trial and error in which only the best solutions and most capable firms will prevail? Shouldn't firms that have the capability to successfully implement "intra-firm-diversity" be rewarded by a higher innovativeness and a superior performance while the firms that lack these capabilities would simply disappear? Hence, it can be questioned why competition authorities should protect "inter-firm diversity" with the ultimate goal that a variety of sources for the generation of future innovations is secured and parallel experimentation is rendered possible, while they restrain the experimental process on the organizational level at the same time.

These are serious questions and should be subject to further research. However, a crucial precondition for our considerations about the protection of "diversity" in merger review was the existence of significant entry barriers for the participation in the process of innovation competition. These kinds of entry barriers became known under the term "specialized assets"[162] and are considered as assets which are indispensible, as well as difficult to acquire and adopt, for the generation of innovations in a certain field. As a consequence, whenever

[162] *See* Gilbert & Sunshine, *supra* note 1.

competition authorities fail to identify such "specialized assets", a loss of "diversity" should simply get balanced by new entrants – regardless of whether the merging parties succeed or fail to create/maintain "diversity" in-house. However, whenever these entry barriers are high and the competitive structure is furthermore already highly concentrated, the assessment becomes more delicate. Under such a setting it can indeed be advisable to challenge a certain transaction and thus suppress the process of experimentation on an organizational level in order to protect "inter-firm-diversity" and thereby the process of parallel experimentation as well as potential sources for future innovations.[163]

[163] For a further discussion, especially with respect to the trade-off between the benefits of "diversity" on the one hand and possible efficiency gains on the other, *see* Cohen & Klepper, *supra* note 39.