

Benjamin Wörner

Masterarbeit

**20 Years of Research on Organizational  
Ambidexterity: A Critical Review and a  
Tentative Model for Future Research**

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Prof. Dr. Georg Müller-Christ (Hrsg.)

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## LIST OF ABBREVIATIONS

cf.	compare (Latin <i>confer</i> )
e.g.	for example (Latin <i>exempli gratia</i> )
Eds.	editors
et al.	and others (Latin <i>et alii/alia</i> )
Fig.	figure
HR	human resources
i.e.	that is to say (Latin <i>id est</i> )
OA	organizational ambidexterity
R&D	research and development
TMT	top management team
TPS	Toyota production system
TQM	total quality management
Vol.	volume

## **PART I - PRELUDE**

### **1. Organizational Ambidexterity as a Challenge**

One of the central issues in contemporary management research is how organizations master the challenge of managing the interplay between change and stability in order to succeed in dynamic and complex environments. On one hand, organizations have to replicate and refine their existing business model, but on the other hand, they have to produce new knowledge and explore new chances. Still, these two antagonistic patterns of learning are competing for scarce resources. In the scientific debate these modes got to be known as *exploitation* and *exploration* (March, 1991: 71). Overcoming this trade-off relationship and creating a balance is imperative for a sustainable success (Gupta et al., 2006: 693). In the Fortune 500, only 61 companies, called „the survivors“, were listed from 1955 till 2010. Most of these companies, like IBM or 3M, changed their business model several times, but in their industries they still remained leaders in efficiency (Fortune, 2011: F-27).

The classic strategy to solve this tension is to alternate between phases of exploration and exploitation. This approach, called *punctuated equilibrium* (Tushman & Romanelli, 1985; Romanelli & Tushman 1994) however, does not keep pace with the increasing environmental dynamism, hypercompetition, and shortening of product life cycles which require organizations to be simultaneously revolutionary and evolutionary (D'Aveni, 1994; Bettis & Hitt, 1995). Recent empirical findings indicate that simultaneously combining exploration and exploitation on a high level has a positive effect on a firm's performance (He & Wong, 2004; Gibson & Birkinshaw, 2004; Lubatkin et al. 2006; Uotila et al., 2009).

*Organizational ambidexterity* (henceforth OA), the organizational ability to simultaneously explore and exploit, has become one of the fastest growing approaches in the field of organizational studies. This is not only shown by the fact that Organization Science recently devoted a special issue to this topic (4/2009), but also by the increasing number of publications in the past few years (Raisch et al., 2009: 685).

O'Reilly & Tushman even call it “a battleground of management thought” (2004: 74). Yet, not only the interest shown in the concept underlines its importance. As OA tries to integrate aspects of several former independent streams of research (such as organizational learning, organizational design, strategic management, and change management), it has the potential to become a new research paradigm, because it consequently runs contrary to the general trend of developing more and more specific and focused theories (Raisch & Birkinshaw, 2008: 403; Raisch et al., 2009: 685). But this strength is also its biggest threat. Due to the multidisciplinary roots and the rapid development during the past few years, today the field presents itself fragmented, inconsistent in its findings, and lacks of a generally shared understanding of the basic constructs. Recent reviews in this field (Raisch & Birkinshaw, 2008; Simsek et al., 2009) also criticize a general inconsistency in the approaches and underlying theories, and point out the need for more research on the basic principles and measurements. In their analysis, however, they remain descriptive and fail to criticize and integrate the existing approaches, nor do they explore the underlying reasons of this dysfunctional development.

This qualitative review study aims to address these gaps in knowledge. Following Humphreys (2011) recommendations, this thesis will not just review the relevant literature, but also synthesize and integrate findings and definitions, organize and frame the existing knowledge, and finally outline paths for future research.

This overall goal will guide the research process. Throughout the study, the following three research questions will be addressed in particular:

- ! First, what is the current state of the art regarding the concept of OA?
- ! Second, what are the underlying problems that hinder the progress of the field?
- ! Third, what are the main tasks for future research that have to be addressed in order to overcome the factors currently limiting the progress of the field?

In order to answer these questions, the study is divided in three main parts. In order to ensure a sound analysis, part I (“prelude”), will first give a brief introduction to the theoretical concept, especially of the underlying paradoxical relationship

between exploration and exploitation (chapter 2). Hereafter, the theoretical and analytical framework of this study will be developed (chapter 3). Part II (“what really is organizational ambidexterity?”), will explore the dynamics and developments of the past years of research. Special emphasis will be given to the various patterns that emerged throughout the field (chapter 4). A graphical mapping will be used to integrate the existing knowledge (chapter 5). Part III (“quo vadis, organizational ambidexterity”) will first make an outline of the underlying assumptions that are hampering the advancement of the field (chapter 6). This will lead to a roadmap for future research, where five distinct paths for future research will be developed (chapter 7). This thesis will close with summarizing the results and discussing the implications of this research.

Being ambidextrous is a challenge in every organization. In this thesis, the goal is to evaluate whether the opportunities balance out the risks associated with this demanding strategy. In Fig. 1 shows a schematic overview of the thesis’ structure.

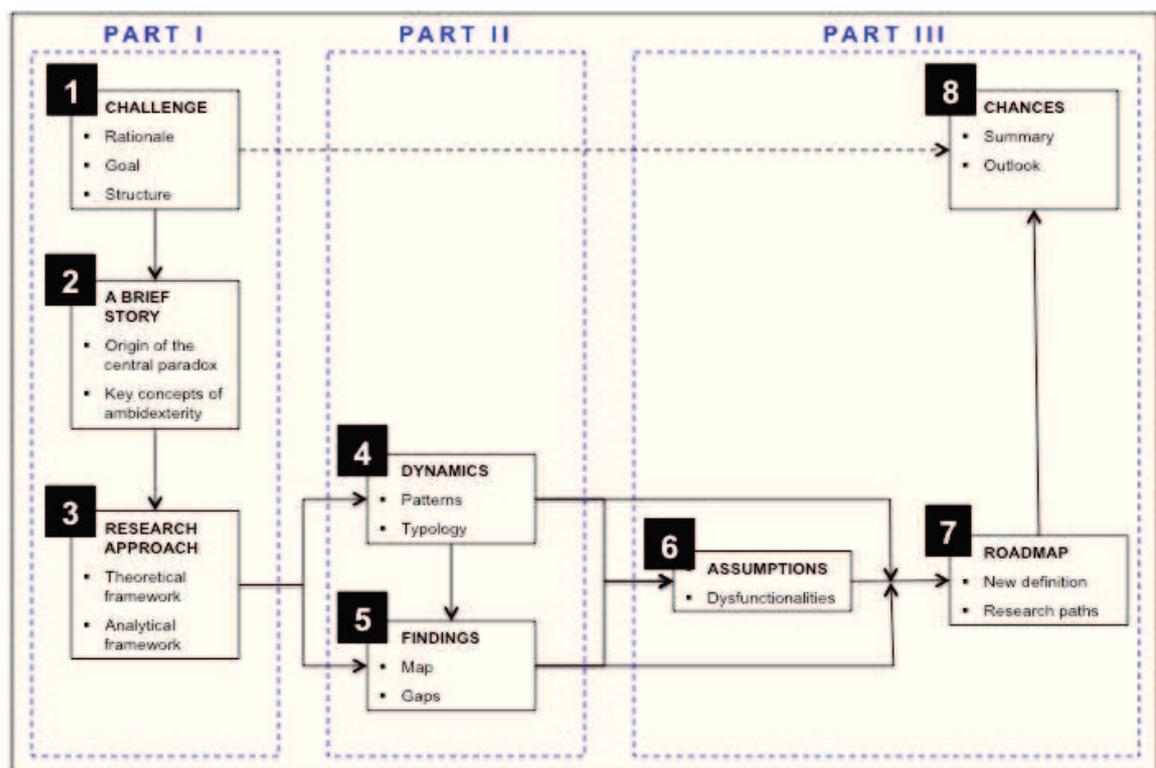


Fig. 1: Structure of the thesis

Source: compiled by the author

## **2. A Brief Story of the Concept of Organizational Ambidexterity**

This chapter seeks to give a first introduction the concept of OA. In order to ensure a sound analysis in the following chapters, a detailed outline of underlying constructs of exploration and exploitation as well as basic preliminary definitions of the relevant concepts are presented.

### **2.1. Origin of the Underlying Tension – The Contradictory Nature of Exploration and Exploitation**

The notion of competing demands or trade-offs is not new in management science. For instance, Thompson (1976) described the trade-off between flexibility and efficiency as a “central paradox of administration” (15). Abernathy (1978) noted that short-term efficiency goals and long-term adaptively are irreconcilable, and called it a “productivity dilemma”. In their famous studies of the most successful US companies, Peters & Waterman (1982: 100) found that the superior firms were those who were best able to deal with the tension between daily business and the exploration of future opportunities. An early solution for the flexibility vs. efficiency trade-off was the contingency approach presented by Burns & Stalker (1966). They argued that organizations should be designed to fit the environment they operate in. In dynamic activity sectors organic organizations are superior because they are able to react more flexible, whereas in rather stable environments mechanistic organizations outperform because they reach higher levels of efficiency.

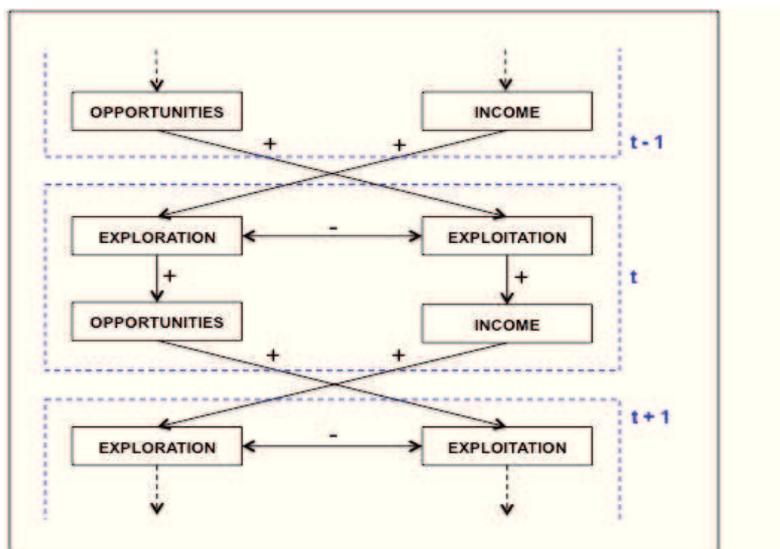
March (1991) analyzed bi-polar organizational tensions through the lens of organizational learning and coined the constructs of exploration and exploitation. Contrary to Agyris & Schön (1978), who were the first who identified different levels of learning (single-loop, double-loop, and meta learning), March (1991) reasoned that exploration and exploitation are dichotomous constructs that compete for scarce resources, and are not seen as additive. Moreover, Agyris & Schön’s (1978) approach rather addresses the question of how the organizational learning takes place, whereas March (1991) concentrates on what is focused in the organizational learning process.

In March's (1991: 71) theory explorative learning modes are characterized as risk-taking, experimentation, play, search, variation, flexibility, discovery, and innovation. The returns of explorative efforts are uncertain and remote in time. On the other hand, the learning modes of exploitation are characterized as refinement, choice, production, efficiency, selection, implementation, and execution (March, 1991: 71). The difference between exploitation and exploration is not about learning or not learning, but rather about different types of learning. Exploitation is based on refining existing routines. Exploration seeks to break through exactly these routines. All activities include at least some learning. This applies even to mere replications, because in social systems there is no such thing as a perfect replication (Gupta et al., 2006: 694). (Levinthal & March, 1993) further point out the substantial trade-off relationship underlying these different processes: "Refining an existing technology substitutes for recognizing a better one and vice versa, [...] the same happens with an organizational structure. Fast adaptation at one level leads to slow adaptation at another level" (101). The problem is, that although outcomes of exploitation and exploration substitute each other, they are no real substitutes. Even though pressure for adaptation in one direction is relieved, it does not relieve the need for the other.

Balancing exploration and exploitation is crucial for an organization's long time survival, as both activities are needed to a certain degree (Leonard-Barton 1992; Levinthal & March, 1993). Imbalances towards one activity can lead to organizational traps. If a firm pushes exploration too much and therefore neglects exploitation it gets caught in the so-called *failure trap* (Levinthal & March, 1993: 105). In this case, as the results of explorative actions are risky, they will most likely lead to failure, which then leads to more exploration and failure again. This way, over time, the company gets caught in a positive feedback loop. This whole process decreases the efficiency and sooner or later the firm runs out of resources. A prominent example therefore is the dot.com bubble at the beginning of this century. New ideas and possibilities were valued high, but they were never realized and never produced the promised returns. The popular concept of the product life cycle shows that returns are usually generated in the later stages of the cycle (Levitt, 1965). The more likely imbalance is towards too much exploitation, which

is called the *success trap* (Levinthal & March, 1993: 106). Success decreases the scope of search, which then increases slack and targets. This is also called the *competency trap* (Raisch & Birkinshaw, 2008: 377) or the *innovator's dilemma* (Christensen, 1997). Tushman & O'Reilly (2004: 276) point towards “the syndrome of success followed by failure”. They describe how success leads to increased size and age, which leads to structural and cultural inertia. This enables the organization to be successful in stable markets on the short-run, but when exposed to changes in the environment, they tend to fail (Tushman & O'Reilly, 1996). Successful companies in the past too often concentrated on the needs and wishes of their present customers but overlooked important innovations. Core capabilities developed into core rigidities (Leonard-Barton 1992: 122-123).

The paradoxical association becomes clear when the phenomenon is viewed over time (see Fig. 2). Exploration at time  $t$  is possible because exploitative processes at  $t-1$  generated revenues. The opportunities generated by explorative actions at  $t$  will be exploited at  $t+1$  and so forth. In this dynamic view, there is no either or, there is always a duality of exploration and exploitation. The imperative has to be “exploit what you explore”. The tension arising in one particular moment between exploration and exploitation cannot be solved by neglecting one of the two.



**Fig. 2:** Paradoxical relationship between exploitation and exploration  
 Source: adapted from Lavie et al. (2010: 117) and extended by the author

The central paradox is that on the one hand, an organization has to keep a balance between exploration and exploitation in order not to get trapped. “The basic problem confronting an organization is to engage in sufficient exploitation to ensure its current viability and, at the same time, to devote enough energy to exploration to ensure its future viability” (Levinthal & March, 1993: 105). On the other hand, exactly these mechanisms of learning contribute to a natural imbalance. Levinthal & March (1993) call these inherent tendencies *learning myopia* and describe them as “dynamics of learning that self-destructively lead to excessive exploitation or excessive exploration” (105).

## **2.2. The Development of the Ambidexterity-Metaphor**

### **2.2.1. First Notion and the Punctuated Equilibrium Approach**

Although the paradoxical relationship of exploration and exploitation was ultimately defined by March (1991), scholars were aware of the problem even before and developed several approaches to cope with organizational tensions.

Duncan (1976) was the first who proposed dual organizational structures for innovation as sequential patterns of organic and mechanistic structures, which he labeled *organizational ambidexterity*. “Ambidexter” is derived from the Latin “ambi” which means “both” and “dexter” which means right. This can be literally translated as “to have two right hands” and therefore means both-handed. As a metaphor it describes an organization that is able to handle two distinct tasks with equal skill. However, Duncan’s (1976) work never received greater attention and the idea of organizational ambidexterity was vanished from the scientific discussion for the time being.

Tushman et al. (1986) developed their framework of alternating organizational transformation processes, called upheaval and convergence, on the newly emerging understanding of organizational change as a constantly ongoing process. In their view, long phases of convergence are disrupted by short, but groundbreaking changes, before the system comes back to balance again. This is called the punctuated equilibrium. This approach was also inspired by previous work on evolution and revolution as drivers of organizational growth (Greiner, 1972). Romanelli &

Tushman (1994) found empirical evidence for their hypothesis, that organizational change happens through long periods of stability and incremental innovations, or equilibria, which are interrupted (punctuated) by short bursts of radical advances (Romanelli & Tushman, 1994: 1141). This perspective goes as far back as to the concept of homeostasis introduced by Lewin (1947). Although they were developed and labeled separately, this reflects Duncans (1976) initial understanding of ambidexterity.

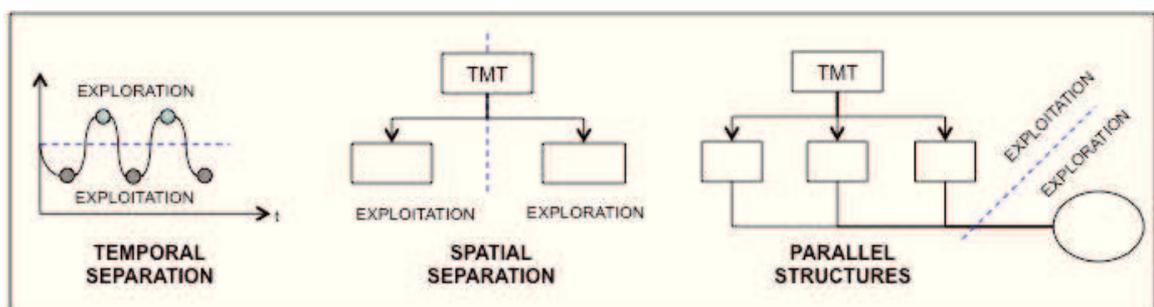
### **2.2.2. Structural Ambidexterity**

Tushman & O'Reilly (1996) introduced the idea of structural ambidextrous organizations, which are capable of managing evolutionary and revolutionary change simultaneously, as opposed to the temporal separation of the punctuated equilibrium approach. They define OA as "the ability to simultaneously pursue both incremental and discontinuous innovation and change" (Tushman & O'Reilly, 1996: 24). This ability is based on hosting multiple contradictory structures, processes and cultures in the same firm (Tushman & O'Reilly, 1996). In this approach, "Ambidextrous organization designs are composed of highly differentiated but weakly integrated subunits. While the exploratory units are small and decentralized, with loose cultures and processes, the exploitative units are larger and more centralized, with tight cultures and processes" (Tushman & O'Reilly, 1996: 24). Within subunits cultures and processes are consistent, but across subunits they are different and loosely coupled (Benner & Tushman, 2003: 247). As the ability is based on the structural separation this approach is called *structural ambidexterity* or *architectural ambidexterity* (Andriopoulos & Lewis, 2009: 697). The highly differentiated subunits must be strategically integrated by the senior management team (Adler et al. 2009: 101, Greve, 2007: 984). A common overarching culture is the glue that holds the structural ambidextrous company together (Tushman & O'Reilly 1996: 28)

Exploitative subunits succeed by reducing variability and maximizing efficiency, and by using size to leverage economies of scale and scope. Exploratory subunits should be kept small and autonomous in order to encourage a culture of autonomy and risk-taking and to foster the generation of new ideas and innovations. Exploi-

tative and exploratory units must be physically and culturally separated from another, because they have different measures of success, mind-sets, strategic logics, incentive systems and follow different logics of learning (Benner & Tushman, 2003: 247). In order to be effective, ambidextrous senior teams must develop processes for establishing new, forward-looking cognitive models for exploratory units, while allowing backward looking experimental learning for exploitative units (Benner & Tushman, 2003: 248).

The idea behind Tushman & O'Reilly's (1996) approach is to solve tensions through separation. Different forms of separating include *temporal separation*, *spatial separation* and *parallel structures*. On an organizational level, the first yields towards the punctuated equilibrium approach and was not included in the model of Tushman & O'Reilly (1996). Spatial separation is the organizational and architectural creation of two distinct subunits for exploration and exploitation. The integration and the transfer of knowledge is achieved through the top management team (TMT). Parallel structures employ a spherical separation. Small organic units focusing on exploration are launched and controlled from the unit level. They can therefore draw on already existing expertise. The integration happens directly in the subunits. According to O'Reilly and Tushman (2004: 77-79), only spatial designs help to achieve superior performance. In their study of 35 initiatives to achieve OA, cross-functional designs or unsupported teams designs (parallel structures) did not reach their intended goal.



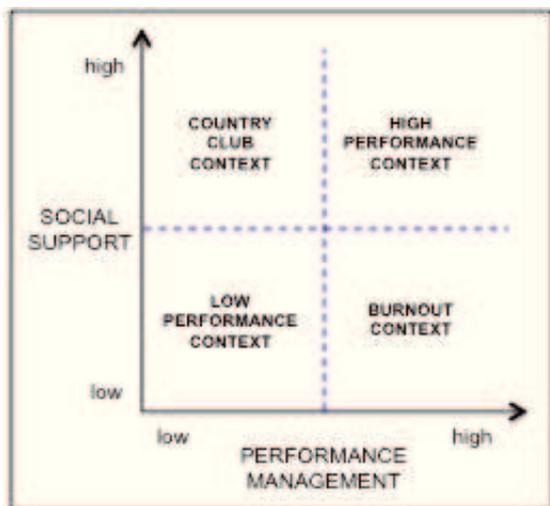
**Fig. 3:** Different forms of separating exploitation and exploration

Source: adapted from Devins & Kähr (2010: 63-64) and modified by the author

### 2.2.3. Contextual Ambidexterity

Gibson and Birkinshaw (2004) introduced a new perspective. Contrasting to the separation idea of the structural and temporal approaches, they state that explorative and exploitative processes can coexist within one organizational unit. This ability arises from the context within which its employees operate (Birkinshaw & Gibson, 2004: 47). They define *contextual ambidexterity* as “the behavioral capacity to simultaneously demonstrate alignment and adaptability across an entire business unit“ (Gibson & Birkinshaw, 2004: 209).

Ambidexterity is not achieved through dual structures, but through building a set of processes or systems, that enable and encourage individuals to make their own judgments about how to divide their time between conflicting demands of alignment and adaptability. (Gibson & Birkinshaw, 2004: 210). In contrast to structural ambidexterity, the locus of exploration and exploitation is throughout the whole organization and not separated (Adler et al., 2009: 101). This is called the context that the approach was named after.



**Fig. 4:** Four types of organizational contexts

Source: Adapted from Birkinshaw & Gibson (2004: 51)

An organizational context is defined as the often invisible set of pressures (control mechanisms) and stimuli (incentives), which motivates individuals to show a certain behavior (Birkinshaw & Gibson, 2004: 51). Four attributes define the context: Stretch, discipline, support, and trust. Taken together, two dimensions of perfor-

mance management (sketch and discipline) and social support (support and trust) define four distinctive organizational contexts: a high-performance context, a burn-out context, a country club context and a low-performance context. At a high level of performance management, individuals are stimulated to deliver high-quality results and take responsibility. Without a high level of social support, which provides individuals with the security and latitude they need to perform, the situation results in a burnout context. The other way round, on a high social support and low performance management context, the organization develops a country club atmosphere. Only with both dimensions on a high level, organizations enable a high performance context, which is seen to be essential for building contextual ambidexterity into an organization (Birkinshaw & Gibson, 2004: 51-52).

### **2.3. Preliminary Definitions**

For the definition of exploration and exploitation, March's (1991: 71) description of exploration and exploitation can be rephrased as describing two antagonistic patterns of mechanisms. Exploration includes, but is by no means limited to processes described by risk taking, experimentation, play, search, variation, flexibility, discovery and innovation. Exploitation includes, but is by no means limited to processes described as refinement, choice, production, efficiency, selection, implementation and execution.

Following the definitions of Tushman & O'Reilly (1996: 24) and Gibson & Birkinshaw (2004: 209), OA will, for the purpose of the following analysis, be defined as the ability of an *organization* to *simultaneously* pursue exploration and exploitation. The implementation of structural or contextual ambidextrous configurations is neither a necessary, nor a sufficient condition for OA. They represent the most common approaches of achieving an ambidextrous organization. However, they are the causes, not the results. The definition refers to the organization as the entity that has to be ambidextrous. Approaches of establishing ambidexterity as a characteristic of a network of organizations are therefore not included. This further implies, that a punctuated equilibrium on an organizational level is not considered as ambidextrous, as exploration and exploitation are not always both present simultaneously.

### **3. A Framework to Analyze 20 Years of Research on Organizational Ambidexterity**

Since Marchs (1991) seminal work, OA has attracted growing research interest during the past 20 years. Despite the great importance and potential of the concept, only two studies have been presented that make the attempt to summarize, structure and review the existing literature (Raisch & Birkinshaw, 2008; Simsek et al., 2009). These papers are taken as a starting point to develop a more elaborate and up-to-date review.

#### **3.1. Theoretical Framework - Reification and Rejuvenation**

In order to clarify the theoretical perspective adopted throughout this study, the motivation and research philosophy must be discussed first. This study neither presents a completely new approach to OA, nor does it contain exciting breakthrough empirical findings. It is rather the attempt to integrate and synthesize existing research in a manner to improve, not to revolutionize the understanding of OA. This is clearly against the general trend in academia, where there seems to be a “premium for novelty”. Rather than coming up with something new, which often enough just leads to “old wine in new skins”, this study follows Pfeffers’ (2005: 438) call for a more “systematic effort to discover a set of primitive first principles [! ] and then begin the task of building integrated models”.

The current practice of editorial review constitutes the development of new theory as the ultimate goal of research, rather than the refinement and empirical testing of existing theory (Ferris et al., 2012: 101). In analogy with organizational ambidexterity, the inherent pressure towards new theories can be interpreted as the demand for radical innovation or exploration. Refining, extending and testing existing theory can be interpreted as incremental contributions to theory or as exploitation. With respect to this, it can be argued, that an academic field faces the same challenge as organizations. Like in ambidextrous organizations, exploratory and exploitative forces have to be balanced in order to ensure the survival of an academic field in the fierce competition of science. Exploration is likely to crowd exploita-

tion out in the short-run, but exactly the outcomes of exploitative efforts are essential for enabling future explorations. Otherwise, the field taps into the failure trap and new theories don't provide a sound enough base, cannot explain the reality sufficiently and are replaced by newer theories even faster. This study deliberately chooses the opposing approach in trying to refine and clarify an existing framework, hoping to help the academic field of OA to become ambidextrous itself.

The theoretical approach of this thesis is inspired by the paper of Lane et al. (2008), which showed that the concept of absorptive capacity was reified. Despite the large number of studies that use this concept, it was unclear what they had collectively accomplished (Lane et al, 2008: 833). This situation is similar to the situation of the OA concept, which Simsek (2009: 620) describes as "undertheorized, underconceptualized, and, therefore poorly understood". Reification of a concept occurs when researchers just use the concept as a general-purpose taken for granted solution to increase the range of problems. They fail to specify the underlying assumptions and the original meaning becomes obscured (Lane et al. 2006: 833-835). This becomes dysfunctional and threatens the validity of the studies that use the concept, because they twist and substitute basic assumptions without reflection and the concept deviates further from its original domain without being adapted to the changed context.

Following Lane et al. (2008), I adopted the proposed two-step approach of reification and rejuvenation. The second part of this paper is dedicated to the question of "what really is organizational ambidexterity". It will review and structure the existing literature and assess whether the concept got reified especially in examining how central the construct is to the paper's core topic and the way in which the studies characterize the relationship between the concept and the organization. (Lane et al., 2008: 839-840). The third part will be led by the question "quo vadis, organizational ambidexterity". To overcome the reification of the OA construct, the implicit assumptions that mislead and limited the progress of the field will be discussed. Building on that, several paths to rejuvenate the concept will be presented in the form of five distinct research paths that will help to overcome this reification and allow for further progress in the field (Lane et al., 2008: 851-852).

The separation of the thesis reflects the different research approaches and goals. Although they build forth upon each other, they represent consistent self-contained logic entities. Part I gives an introduction to the field and the concept and develops the approach used to investigate a field characterized by a reified concept. Part II has a predominant descriptive focus and deals with the challenge to structure, describe and clarify the variety and amount of studies dealing with OA out there. The overview and synthesis provided is unique to the field and the first major contribution of this thesis. Part III employs an exploratory research approach. On one hand, this approach will go in-depth and explore the underlying assumptions that lead to the misuse of OA, on the other hand it will also have a broadening focus as it attempts to explore new possibilities to further develop the concept.

## **3.2. Analytical Framework**

### **3.2.1. Scope and Methods for Paper Selection**

In order to make the review as comprehensive as possible, a multiple step approach was applied. First, several databases (Business Source Premier, sciencedirect, Econ Lit, JSTOR, PsycNet, emeraldinsight, e-lib Uni Bremen) were searched to cover all major journals in the social sciences and related fields. Additionally Google Scholar and SSRN were searched to also include working papers, conference papers, dissertations and other relevant publications not covered by the first databases. In both cases, it was searched for the keywords “ambidexterity” and “ambidextrous” in the title, abstract and keywords. In order to also include the German speaking literature also the German translations were used (Ambidex-terität, Ambidextrie, ambidexter). These rather general keywords were used not to exclude e.g. studies that focus exclusively on structural ambidexterity or contextual ambidexterity, unlike e.g. Simsek et al. (2009: 869) who just uses the combinations “organizational ambidexterity” “ambidextrous organizations”, “firm ambidex-terity” and “ambidextrous firm. Additionally, googlescholar was used to search for articles that quote key literature (Mach 1991, Levinthal & March 1993, Tushman & O’Reilly 1996, Gibson & Birkinshaw 2004).

The resulting papers were first scanned by their titles and abstracts in order to evaluate if they fit the purpose of this study. Due to the multidisciplinary nature of the concept, research on OA cannot always be clearly separated from related concepts. This study aims to exclude where possible topics closely related but not beneficial for the understanding. There is, for instance, an extensive amount of literature addressing the concept of exploration and exploitation itself. Although interrelated, OA is about how to deal with the tensions arising and therefore addresses the relationship between exploitation or exploration (unlike e.g. Raisch & Birkinshaw who also discussed articles which deal with exploration or exploitation individually). Also Studies that presented a different understanding of OA (according to the preliminary definition) such as a cyclical understanding or ambidexterity in interorganizational networks were excluded, as were studies from completely different disciplines like medicine or history.

This resulted in a final sample of 71 publications of which 65 were in English and 6 were in German. The sample covers 54 journal articles, 6 books or book chapters, 2 conference papers, 4 working or discussion papers and 5 dissertations. The range covers an exhaustive review from 1996 (first ambidexterity paper) till 2012, and can therefore be considered the biggest review sample so far. Raisch & Birkinshaw (2008) just covered selected articles until 2007. Simsek et al. (2009) besides having a different focus and selection criteria just covered papers till 2009.

Due to the limitations of a master's thesis and the extensiveness of the literature, it is not feasible to provide a throughout narrative review in which each study will be discussed separately. I aim to investigate the streams of research as a whole; therefore only selected studies will be presented individually. A brief summary of all studies can be found in the appendix.

### **3.2.2. Analysis of the Papers**

After defining the criteria for paper selection, relevant articles were subsequently filtered out and read more extensively. Notes were taken while reading the articles to collect a intuitive first impressions about themes, trends, and the general idea of

the papers. After this first overview, the existing reviews were taken as a starting point to create an initial framework for analyzing the literature.

Raisch & Birkinshaw (2008) developed a comprehensive input-process-output framework to analyze various literature streams. They cover research into antecedents, moderators and outcomes of OA. They further present a very deep analysis of the various disciplinary roots of the concept and outline different schools and their contribution to the concept. Simsek et al. (2009, p. 867-869) developed a typology of organizational ambidexterity through distinguishing different archetypes of ambidexterity along a temporal dimension (sequential vs. simultaneous) and a structural dimension (independent vs. interdependent). They distinguish harmonic, cyclical, partitioned, and reciprocal ambidexterity. They review the literature with a special emphasis on the outcomes associated with OA along the different types. As defined in 2.3., the understanding of OA applied in this study concentrates on simultaneous approaches, which shrinks the applicability of the Simsek et al. (2009) typology to the distinction between structural and contextual ambidexterity.

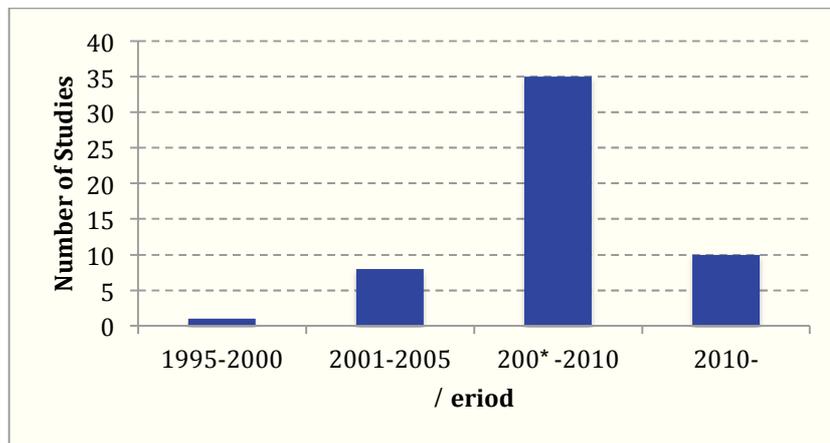
The categorizations of the reviews were taken to set up a framework (in the form of a table template, see appendix), which was subsequently filled out during the second, more detailed review process. These initial categories also served as „sensitizing constructs“ (van de Ven, 2007: 215-217) for the sense making process during the second round, which was also guided by the goal of identifying the underlying causes of reification. The notes from the first intuitive reading and the second detailed and more structured reading were then clustered into different streams, main topics, approaches and contributions. The final taxonomy will be presented in the following chapter. At this point, it shall be noted, that every taxonomy represents to a certain extent a “forced fit”. Not every study can be classified unambiguously. The final lines are drawn in a way to make the most sense of what is out there but they are by no means perfect, nor are the categories exhaustive.

## PART II - WHAT REALLY IS ORGANIZATIONAL AMBIDEXTERITY?

### 4. A Typology of Organizational Ambidexterity

#### 4.1. Patterns of a Scientific Field

The notion of OA as a “hot” research topic in the first chapter can be confirmed. The rapidly increasing number of publications clearly shows a growing interest in the concept. Most of the advancement has been made in the last years. Since the last Review by Simsek et al (2009), the number of studies has doubled (36 new studies from 2009-2012).



**Fig. 5:** Number of studies on OA

*Source:* compiled by the author

A clear trend can be made considering the main approaches. The main level of analysis applied is form an organizational level (54 studies). Individual or multilevel studies are not very common (4 studies each), a team or business-unit perspective is even rarer (2 studies each). The approaches applied cover conceptual papers (18), quantitative (23) as well as qualitative (27). Most common qualitative approaches are case studies. Quantitative studies mostly use survey data and statistical methods (regressions or extensions of those). Some scholars even tested the OA construct in simulation experiments (3 studies)

One main distinction can be made concerning the different approaches to OA. 40 studies exclusively deal with structural ambidexterity and 20 with contextual. Only 11 take both approaches simultaneously into account. This is in line with (Brunner et al., 2010, 4-7) who described the division of the field in a conflicting (structural ambidexterity) and a complementary school (contextual ambidexterity). The two schools are already quite distinct regarding their approaches and methods used. Whereas contextual ambidexterity was examined by conceptual (6) as well as qualitative (6) and quantitative approaches (4), structural ambidexterity was mostly examined by qualitative (15) and quantitative (15) studies. Regarding the level of analysis, a pattern is clearly observable. Structural ambidexterity was almost exclusively examined on the organizational (36) or unit level (2), whereas contextual ambidexterity was conceptualized across all levels: Organizational (10), unit (3) Team (2), and individual level (4) respectively.

In Raisch & Birkinshaw's (2008: 377-380) review, a typology following the various literature streams and theoretical backgrounds is proposed. They outline several sub-disciplines of management research as theoretical lenses through which researchers have approached the OA question: Organizational learning, technological innovation, organizational adaptation, strategic management, and organizational design. These categories however, do not reflect the variety of approaches found in the studies. They are better covered by: Organizational learning, Organizational design, Innovation, Strategy, Leadership, and a final category of non-classifiable studies. At a first glance, this typology reveals a concentration in the innovation (21), strategy (18) and leadership focused studies (18). An organizational learning and an organizational design lens was far less applied (7 each), only two studies did not fit in any category. This is especially interesting, as the foundations of OA are explicitly in the organizational design (Duncan, 1976) and organizational learning (March, 1991; Levinthal & March, 1993) literature. This short analysis further shows, that scholars do not necessarily stick to one perspective. Jansen (2005; 2008), for instance, clearly applies a strategy lens, whereas Jansen et al. (2008) yield towards a leadership perspective. Also Tushman et al. switch between a leadership perspective (2011) and an innovation perspective (2010).

## 4.2. Definitions

Another approach to search for patterns in the literature is to look at the definitions of OA applied in the studies. Simesk (2009, 600-601) classified previous definitions into three categories: Structural, behavioral and realized. The structural view describes organizational designs containing different units for exploration and exploitation (read: structural ambidexterity). The behavioral view refers to organizations that achieve ambidexterity through creating a certain context (read: contextual ambidexterity). The realized view defines OA through its actual achieved exploration / exploitation balance and is more an overarching external view. Although this typology is theoretically compelling, it does not fit to the huge variety of definitions. Most definitions (see Fig. 5) contain elements of both, the outcome (balance / integration / simultaneity of two conflicting modes) and a notion of how and organization achieves this outcome.

REFERENCE	DEFINITION
Tushman & O'Reilly, 1996: 24	The ability to simultaneously pursue both incremental and discontinuous innovation and change.
Gibson & Birkinshaw, 2004: 209	The behavioral capacity to simultaneously demonstrate alignment and adaptability across an entire business unit.
Gupta et al., 2006: 693	Pursuit of both, exploration and exploitation via loosely coupled and differentiated subsystems or individuals, each of which specializes in either exploration or exploitation.
Jansen, 2008: 107	Ambidextrous organizations are complex organizational forms composed of multiple internally inconsistent architectures that are collectively capable of operating simultaneously for short-term efficiency as well as long-term innovation.
Raisch & Birkinshaw, 2008: 375	An organization's ability to be aligned and effective in its management of today's business demands while simultaneously being adaptive to changes in the environment.
O'Reilly et al., 2009: 32	The dynamic capability of an organization to simultaneously explore and exploit.
Jansen et al., 2009, p. 799	Routines and processes by which organizations mobilize, coordinate, and integrate disperse exploratory and exploitative efforts, and allocate, reallocate, combine and recombine resources and assets across differentiated units.
Sfirtis & Moenaert, 2010: 44	A high-order dynamic capability that governs the continuous optimization of the interaction between exploration and exploitation.
Datta, 2011: 21	The property of an organization to balance activities of exploration and exploitation.

**Fig. 6:** Selected definitions of OA

Source: compiled by the author

The first element is present in all definitions and can be considered as a “least common denominator” representing the core definition of OA (which is in line with the preliminary definition outlined in 2.3.). The notions of what is pursued simultaneous and of how this is achieved vary heavily. This reveals one of the core problems of the field: The absence of a generally accepted definition of OA. There has never been a real definition of OA. March (1991) described the tension but never used the term ambidexterity in his paper. Duncan (1976) on the other hand, described dual structures without the background of the underlying tensions of exploration and exploitation. Neither Tushman & O’Reilly (1996: 24), nor Gibson & Birkinshaw (2004: 209) use exploration and exploitation in their initial definitions. The later definitions, however seem to show a consensus in this direction.

#### **4.3. Goals and Foci**

Taking the overall goal of this study into account, a final categorization can be made according to the main goal or the questions asked in the articles, respectively. The questions were not about the methods employed, or the disciplinary background, but rather on what was the intention of the authors, in which way they want to contribute. A clear distinction is possible in the most cases, where authors attempted to contribute to multiple categories, the one where the outcomes were most meaningful was chosen.

Following, two major categories can be identified. Firstly, studies exist that take the “ambidexterity-hypotheses” as a starting point and then try to extend, test or clarify the this model. Secondly, studies exist that did not draw on or rejected the OA concept. These studies do address the core of the exploration / exploitation problem and try to (re)address the basic questions of how organizations can reconcile the conflicting demands.

In the first group (the one that started with the ambidexterity hypothesis), the generic input-process-output framework as proposed by Raisch & Birkinshaw (2008) can serve as an initial sub-categorization. The studies can surprisingly clearly be divided in whether they either concentrate on the antecedents or on the outcomes of ambidexterity. The dominant approach is those of classical variance studies

starting with a hypotheses drawn from previous literature which takes the form of “how does X influence Y and is this relationship moderated by Z”, where OA (or a proxy of OA) was the dependent variable in case of the antecedent focused studies or the independent variable in case of the outcome focused studies. Also the conceptual papers followed this logic, except presenting postpositions instead of hypotheses.

*Antecedents / General:* This large group of studies links all kinds of antecedents to the pursuit of OA. Some try to integrate existing frameworks and tools as antecedents, such as TQM (Luozo & Pasola, 2011), HRM tools (Litz & Klimecki, 2005; Kang & Snell, 2009), scenario planning (Bodwell & Chermack, 2010), management control systems (McCarthy & Gordon, 2011), and process management practices (Benner & Tushman, 2003). Two studies outline the driving role of environmental dynamism for the establishment of OA (Jansen et al., 2005; Judge & Blocker, 2008). The majority focused on different internal idiosyncrasies drawing from wide rang of concepts such as organizational culture (Frank et al. 2010; Woltersheim, 2010, Li et al., 2008) psychological safety (Kostopoulos & Bozionelos, 2011), social integration mechanisms (Jansen, 2009), absorptive capacity (Datta, 2011), internal social capital, intraorganizational networks (Tylor, Helfat, 2009, Fang et al., 2010), as well as organizational context and vision (Köllinger et al. 2009; Güttel & Konlechner, 2009; Filippini et al. 2012).

*Antecedents / Leadership:* In the group of studies focusing on the antecedents one big category of studies focuses exclusively on leadership related antecedents. They do not exclusively deal with leadership as in the sense of leader-follower interaction, they apply a rather boarder perspective including senior team characteristics and behaviors (Jansen et al., 2008; Carmeli & Halevi, 2009; Cao et al., 2010; Dover & Dierk, 2010). Others apply the idea of ambidexterity to leadership and postulate that leaders have to switch between behaviors that facilitate exploration and those that facilitate exploitation (Rosing et al., 2010; Bledow et al., 2011; Probst et al., 2011; Rosing et al., 2011; Tushman et al., 2011). Some studies finally describe the specific leadership tasks associated with managing an ambidextrous organization (Martinich, 2005; Mom et al., 2009; Nemanich & Vera, 2009;

Zimmermann, 2009; Schrudy, 2010; Lin & McDonough 2011, O'Reilly & Tushman, 2011;2011; Weibler & Keller, 2011).

*Outcomes / Performance:* The group of papers focusing on the outcomes consist of few studies that exclusively test the OA-performance relationship, and those which more follow a contingency approach and ask how OA affects performance under certain circumstances. Six quantitative-empirical studied tested the ambidexterity-performance relationship in different settings (He & Wong, 2004; Lubatkin et al., 2006; Groover et al., 2007; Sarkees & Hulland, 2009; Uotila et al., 2009; Mahr, 2010).

*Outcomes / Contingency:* The other studies either looked at internal idiosyncrasies such as strategy type, market orientation, or successful implementation (Auh & Menguc, 2005; Menguc, Auh, 2008; Sarkless et al., 2010; Suzuki & Menthé, 2011) or at external contingency factors like environmental munificence or environmental dynamism (Tay & Lusch, 2007; Cao et al., 2009). Two scholars also examined possible boundary conditions such as an extend time frame and costs associated with OA (Van Looy et al., 2005; Proff & Haberle, 2010). Three studies focusing on performance contingencies are notable because they compare structural and contextual approaches. Güttel & Konlechner (2009) theoretically outline the differences between the two approaches and discuss how and under which conditions they can affect performance. Jansen (2009) empirically shows a relationship between firm-ambidexterity and firm-performance which is stronger if the firm applied a structural separation than a contextual approach. Schulze (2009) found no influence of the type of OA on the performance outcomes.

The second major group does not take the ambidexterity hypotheses as a starting point. They address the core construct and extend, revise or even completely reject and reconceptualize it.

*Core Construct:* The majority of studies in this group are empirical and conceptual papers which all address the core questions of OA of how exploration and exploitation can be successfully managed. Most notable are the seminal works of Tush-

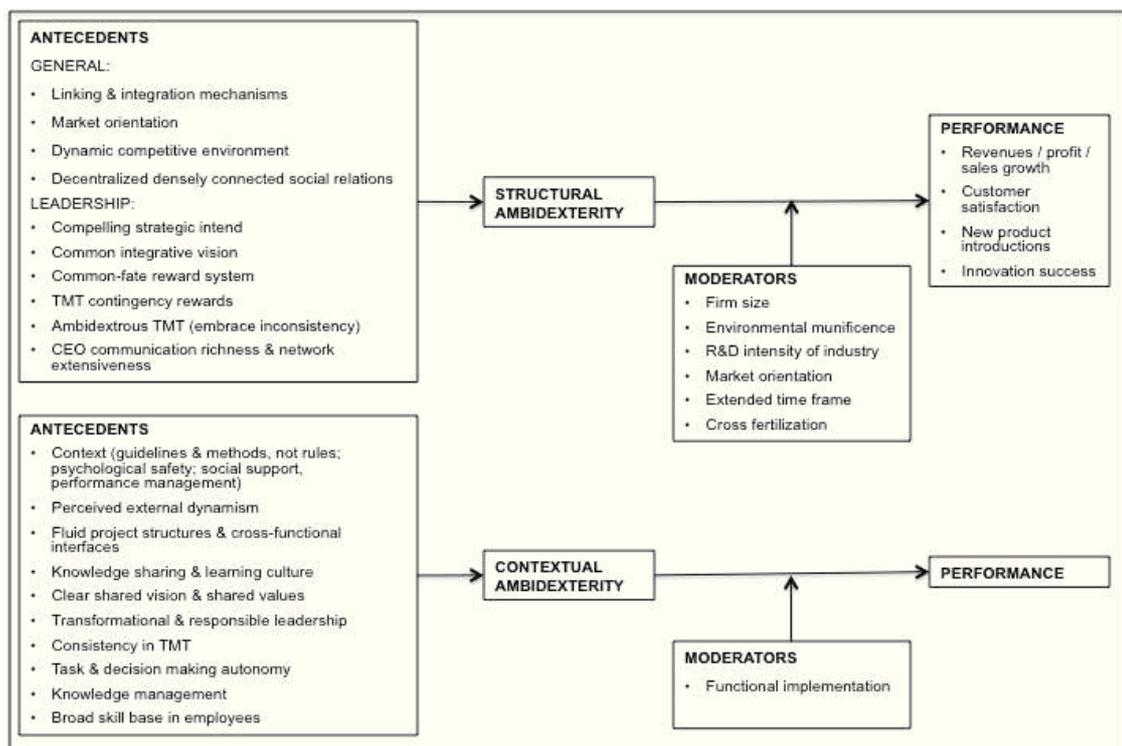
man & O'Reilly (1996) who introduced structural ambidexterity and which can be considered the first "real" OA paper (also O'Reilly & Tushman, 2004), as well as Gibson & Birkinshaw (2004) and Birkinshaw & Gibson (2004) who added the new idea of contextual ambidexterity. Others try to extend the idea in giving explanation from an evolutionary theory perspective (O'Reilly et al., 2009), or giving deeper insight in the different forms of ambidexterity (Schmitt et al., 2010; Tushman et al. 2010). Notable reconceptualizations are the introduction of OA as a high-order dynamic capability (Güttel & Konlechner, 2007; Sfirfis & Moenaert, 2010) or the attempt to transfer OA to related fields of marketing (Prange & Schlegelmilch, 2009), innovation projects (Dursin & Todovora, 2003) or transfers to the specialized cases of MNE (Luo & Rui, 2009) or SME (Boalino, 2008). Special attention should be drawn on the paper of Simsek (2009) who votes for a multilevel understanding of OA and to those papers which introduce paradox theory as a way to analyze and extend OA (Jansen, 2008; Andriopoulos & Lewis, 2009; Andriopoulos & Lewis, 2010).

*Core Construct / Review:* Included here are the two reviews as already discussed above (Raisch & Birkinshaw, 2008; Simsek et al. 2009) as well as the editorial of the Organization Science special issue on OA by Raisch et al. (2009). These are reviews, which try to synthesize the existing literature and give an outlook for future researchers.

Although not in the sample derived from the search in the databases, the table in the appendix contains a section of articles marked as *foundations*. These are highly influential papers that mostly address the understanding of the underlying construct of exploration and exploitation. Some of them (March 1991, Levinthal & March 1993) have already been discussed. In the appendix, the foundations and the reviews are presented in a separate table, as they are not counted to the sample of studies.

## 5. Summary of Findings

Due to the broad amount of different definitions and conceptualization it is impossible to aggregate the existing results in terms of effect sizes to generate a meta-analysis. This chapter will, however, present a graphical attempt to visualize the existing empirical works. While reading the studies and generating the overview table, findings of empirical studies were written down in a separate document coded as linkages. As structural and contextual ambidexterity were mostly treated as separate theories in the empirical research, two graphs that illustrate the existing relationships that have been tested by previous works are presented. They represent empirical results and are not meant to be exhaustive or representative and rather give an overview on what has been on the research agenda.



**Fig. 7:** Map of existing empirical relationships

Source: compiled by the author

This map confirms the impression shaped in the previous chapter that structural ambidexterity as the “older” approach has drawn more attention by empirical research than contextual has. Two points stick up. First, the comparably weakly researched relationship between structural ambidexterity and performance. Second, the relative dominance of different antecedents constructs. Here, redundancies and overlapping concepts stand next to each other. In creating the map, the declaration of the constructs in the studies was taken as a given. Compelling strategic intents and integrative vision seem to be closely related as are knowledge management and knowledge sharing culture. They have been examined in separate studies. This confusing pattern yields towards a low coherence amongst the existing studies. An elaboration of the gaps and possible approaches for future researchers will be done at length in chapter 7. For now, the intention is to wrap-up the presented information of this part towards the question “what really is organizational ambidexterity?”.

In a first attempt to answer the question this would have to end disappointing. Although the extensive amount of literature reviewed, the shared edge remains small. The research is widely fragmented and does not point towards an inherently logic research goal. OA is a hyped but still poorly understood field. The consensus is, that OA is the organizational ability to balance certain organizational trade-offs and seems to be positively related to performance. Besides this, researchers rather refined this notion in several directions, which lead to the formation of distinct and not interconnected research streams. Findings can hardly be transferred from a structural to a contextual approach. Empirically confirmed antecedents can't be integrated with outcomes as the studies employed different conceptualizations and understandings of OA. Enriching an existing model by applying new perspectives and introducing new extensions is per-se not problematic as long as these attempts depart from a generally shared knowledge base and finally link back and outlining how the understanding of OA was enriched. This point, however, was widely neglected. The field lacks of a general coherence. The knowledge about OA points towards a rather casual “we know all, but nothing”. Fragmented findings are not integrated in the existing model and the studies do not build on each other. The field is “running on the spot”.

Rosenkopf & McGrath (2011: 1297) refer to the field of OA as “normative literature that celebrated exemplary behaviors by organizations at particular times and contexts”. The “snapshots” of the single studies do not fit together in a bigger picture. These facts characterize reification as described by Lane et al. (2006: 833-835). The concept of OA was taken as a general-purpose framework and applied to multiple contexts and questions without reflecting on the underlying assumptions. This makes it difficult to aggregate the knowledge and the studies did in the end not contribute to the progress of the field as the scholars probably intended.

An interesting anecdote best illustrates that the lack of coherence is not a recent development, but has been in the field from the beginning. The seminal works of OA do not refer to each other. Duncan (1976) was the first who used the term “ambidextrous organization” but neither March (1991), nor Tushman & O’Reilly (1996) refer to his work. This is even more confusing, as Tushman & O’Reilly (2004) entitle their article “The Ambidextrous Organization” with exactly the same title as Duncan’s (1976) paper. Also Tushman & O’Reilly do not quote March (1991) or Levinthal & March (1993) although they defined the underlying problem.

## **PART III – QUO VADIS, ORGANIZATIONAL AMBIDEXTERITY?**

### **6. Dysfunctional Underlying Assumptions**

Based on the descriptive analysis done in part II, five central underlying assumptions will be outlined, which mislead and limit the progress of the field. In the introduction to the *Organization Science* special issue on OA, Raisch et al. (2009: 685-686) outlined four central tensions in the field that they labeled as still unexplored, ambiguous or conceptually vague: Differentiation vs. integration (read: structural or contextual ambidexterity), individual vs. organizational level, static vs. dynamic, and internally vs. externally. In this part, their logic will be followed, however, their framework will be extended and adapted and will not be marked as vague tensions but as clearly dysfunctional assumptions. The misleading assumptions will not only be pointed out, but the underlying reasons behind these developments will also be explored. The connection with this deeper view will be the foundation for re-conceptualizing OA.

#### **6.1. Structural and Contextual Ambidexterity are Treated as Separate Constructs**

Gibson & Birkinshaw (2004) proposed their contextual approach as an advancement of Tushman & O'Reilly's (1996) initial introduction of structural ambidexterity. However, they did not start a discussion about which of the two approaches would be more favorable or superior. Most studies operate inside one of the two schools and concentrate either on structural (conflicting school) or on contextual ambidexterity (complementary school) (Brunner et al., 2010). To date, there are just a few studies that explicitly address both. Jansen (2005), for instance, includes a comparison of the effectiveness of both approaches. However even in his dissertation this was just a minor part. Most researchers are clear on their perspective, but they do not reflect on their decision for the chosen approach.

The explanation for this separation lies deeply rooted in the historical development of management science, which subsequently lead to distinct paradigmatic schools.

Each of them has distinct assumptions about whether organizational tensions exist, how they are conceptualized, and how they should be treated. This finally lead to the wrong conclusion that the different approaches to ambidexterity should not be considered in one study as they are conceptually distinct.

Volberda (1998) introduced three idealized management perspectives, which evolved over time. Each perspective holds different assumptions about the organization, the individual and the environment, which ultimately influenced the theories developed by scholars operating in the respective perspective.

	<b>CLASSIC</b>	<b>MODERN</b>	<b>POST-MODERN</b>
<b>Metaphor</b>	Machine	Organism	Brains
<b>Organization (structure)</b>	One best way ("one size fits all")	Equilibrium "fit between structure and environment"	No Equilibrium, no one best way
<b>Environment</b>	Closed system approach	Open system approach (deterministic, stable)	Open Dclosed system approach (constructivist, rapidly changing)
<b>TasC</b>	structuring	fit Dmatching	dynamic balance between contradictions

**Fig. 8:** Three idealized management perspectives

Source: adapted from Volberda (1998: 26) and extended by the author

*Classic management perspective.* This perspective covers the beginnings and the first seminal works in management theory. The ongoing industrialization at the beginning of the last century rose questions on how to manage the newly developing organizations. Taylors' (1911) "scientific management" is seen as the first systematic approach to the question on how to organize work efficiently. Taylor postulated a division of labor, a separation between "head" and "muscle" work and "one best way" to execute and organize a certain task. (Pugh et al., 1964: 133-137). In the classic theory, the organization is seen as a machine-like construct that has to be designed for one specific task. The individual is mostly seen as a carrier of his workforce (cf. March & Simon, 1993: 25, 31-40). They need clear orders and can-

not deal with conflicting demands (Fayol: “unity of command” (Pugh, 1971: 125-176)). Classic theory never mentions flexibility or adaptability as a goal. The main focus of attention was on efficiency. The environment does not play a big role. It is seen as stable and predictable and therefore as a constant that is not to be paid too much attention to. By the time these theories were developed, the main goal was to increase production while decreasing price per unit to serve the increasing demand (exploitation). Most organizations were relatively young and still struggling with establishing themselves.

*Modern management perspective.* Driven by the ongoing economic development and the rising globalization, new theories evolved. Mayo (2003) discovered the effect of informal groups in organizations and set the foundations of the human relations movement. Simon (1997) introduced the “administrative man” as a more realistic concept replacing the “economic man”. Selznick (1957) shaped the systemic view of the organization. In his traditional institutionalism, he described the passivity of organizations and the determinism of institutional contexts (cf. Nasim & Sushil, 2011: 198). The structural approach of the classic theory and the human relations view were synthesized into the structural contingency theory (Donaldson, 1995: 11-13, 32-41). Chandler (1977; see also: Pugh et al. 1964. 51-54) described the development of a new multidivisional structure as response to changing environments. Burns & Stalker (1966, see also: Pugh et al. 1964: 32-36) and Woodward (Pugh et al., 1964, 25-31) introduced the contingency factors of environmental dynamism and production systems. In this approach, an organizations’ success was determined by how well it was aligned with environmental demands. The organizational design had to fit the challenges the firm faced (Jansen, 2008: 104). This view reflects a rather deterministic approach towards the environment, as the organization is reactive and the structure is externally determined. The contingency factors themselves are seen as relatively stable. In the study of Burns & Stalker (1966) organic structures would bring the needed flexibility in a dynamic environment, if faced a stable environment, mechanistic structures would help to achieve efficiency and succeed in the market. This would finally lead to an equilibrium at which the firm was most efficient. The focus was on achieving this fit. Following, the organization is seen as an open system, which reacts to the environment. The

environment is still predictable, slowly changing and consistent. Individuals are seen as subjects with own will, feelings, attitudes and emotions. But they are still seen as rather passive and reactive (cf. March & Simon, 1993: 25).

In this perspective conflicting demands are mentioned for the first time. Barnard (1938) already acknowledged the problem; “the continuance of an organization depends on its abilities to carry out its purpose, but there is the paradox that it destroys itself by accomplishing its objectives” (Pugh et al. 1964:69). This corresponds to Marxist dialectic where every practice also contains the seeds of its own destruction (Clegg et al. 2002: 491). The answer to this challenge is repeated adoption of the purpose of the organization. The study of Burns & Stalker (1966) is often associated with conflicting demand, as mechanistic structures yield towards exploitation and organic structures yield towards exploration. But for Burns & Stalker (1966) dynamic and stable environments are not present simultaneously. They rather present a continuum and the organization reacts with its structure to the degree of environmental stability. Also Porter (1980) argues against hybrid strategies, which combine two opposing goals. In his framework, firms decide for a generic strategy derived from an analysis of the environments. If firms try to pursue dual strategies, they might get “stuck in the middle” (Porter, 1980: 41).

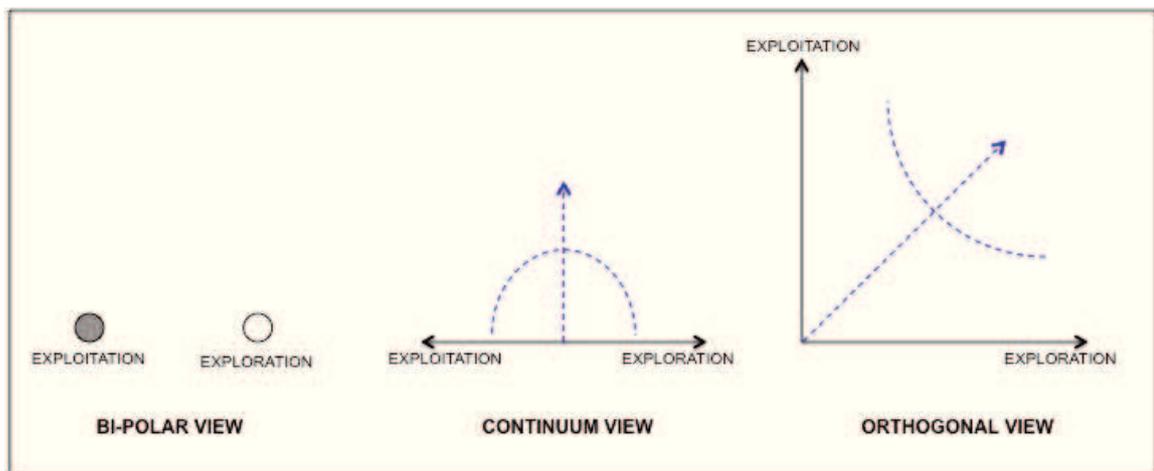
*Postmodern management perspective.* As the premises of the modern management perspectives did not reflect the organizational reality adequate enough, the idea of postmodernism was introduced to management theory. Classic and modern management theories rely on abstract models, which lead to consistent theories and clear implications for practitioners on how to react on different environmental states. In postmodernism, formerly formalized prescriptive rules are replaced by general methods how to approach certain problems. Postmodern management theory is driven by an environment characterized by increasing hyper-competition (D’Aveni, 1994) and shortening of product life cycles (Bettis & Hitt, 1995), which lead to contradictory internal and external demands. The organization is now more understood as a complex self-organizing brain like metaphor (Volberda, 1998). This reflects a rather constructivist understanding of reality. Individuals are seen as active decision makers and problem solvers (cf. March & Si-

mon, 1993: 25). Bartlett & Ghoshal (1993: 44-46), for instance, present a new positive view on humanity. Employees are capable of both initiative and shrinking. It is the management that has to create an internal context that enables them to bring their best side forwards. Individuals are seen as able to make own decisions and cope with tensions.

In a postmodern view the organization is affected by its environment in the same way as the organization also shapes its own environment. In this almost interpretative perspective, an organization faces “multiple contingencies” (Child, 1984: 228). This causes contradictions that have to be solved. This finally leads to a shift from an either / or to a both / and thinking (cf. Jansen, 2008: 104-105). Organizations face multiple conflicting demands of which exploration and exploitation are just one (others, e.g. specialization vs. diversification). Similar, Child & McGrath (2001) conclude: “paradox is likely to be the core theme of postmodern organization design” (1144). Cameron (1986) even states: “To be effective, an organization must possess attributes that are simultaneously contradictory, even mutually exclusive” (545). Postmodern theory does deliberately not give clear “foolproof” recipes. As opposed to the normative-prescriptive paradigm of classic and modern theory, postmodernism rather aims to understand and describe organizational reality (cf. Mitzberg, 1980).

Regarding the conflicting demands of exploration and exploitation, the three perspectives yield towards three distinctive views. In the classic perspective, a trade-off relationship or a paradox is not explicitly mentioned. Derived from the implicit assumptions, one can conclude that exploration and exploitation are viewed as mutually exclusive, distinct mechanisms. There is no connection between them. This reflects a *bi-polar view*. It is a clear either / or model, where classic scholars would mostly choose the exploitative pole. In a modern management perspective, external demands are seen as determining the strategy and the structure of the firm. They can range from one extreme to another and the firm tries to achieve a close fit in order to be perfectly adapted to its environment. This reflects the idea of a trade-off relationship (Levinthal & March, 1993; March 1991). The poles are still insurmountable, but there is a *continuum* between them in which the organiza-

tion can move. Ultimately, this leads to a resource allocation dilemma for the organization. In the postmodern management perspective, conflicting multiple contingencies is a central topic. The two demands are no longer seen as mutually exclusive but as independent. They are therefore *orthogonal* which allows reaching high exploration while simultaneously being highly exploitative. Implanting this to an organization is still very challenging but no more conceptually impossible.



**Fig. 9:** Bi-polar, continuum, and orthogonal view on exploitation and exploration

Source: compiled by the author

The two dominant perspectives on exploration and exploitation in contemporary OA literature are the continuum view and the orthogonal view. The continuum view was mainly shaped by March (1991), who described exploration and exploitation as fundamentally incompatible as they are competing for scarce resources and the modes also require two distinct mindsets to be managed (Gupta et al., 2006: 695-696). Some of March's (1991) assumptions can be criticized. A trade-off would imply that if one maximizes one extreme side of a continuum, this should gradually crowd out and minimize the other. However, in the reverse turn, it does not hold true, as if one tries not to exploit, this does not automatically lead to exploration. One can neither explore nor exploit, thus they are two independent dimensions. Another argument is that not all resources are scarce. Knowledge and information can also be viewed as infinite (Gupta et al., 2006: 695). Also Katila & Ahuja (2002: 1192) noted, that in the case of new product development, there is no conflicting mindset, rather an interaction of both modes was seen as beneficial. Also several

observations of organizations that simultaneously showed high levels of exploration and exploitation shed doubts on March's (1991) arguments (e.g. Baum et al., 2000). The distinction also depends highly on the perspective. Exploration and exploitation may be mutually exclusive in a static observation of an individual, but can be orthogonal if one views different domains, or if one applies a dynamic perspective or a higher level of analysis.

The different views directly lead to different approaches to OA. When introducing their new concept of contextual ambidexterity, Gibson & Birkinshaw (2004: 209) noted that it is based on a shift from trade-off to paradoxical thinking. In a bi-polar view, exploration and exploitation are regarded as discrete choices. An organization can just pursue one mode at a certain time and thus the only resulting strategy option is a temporal separation. The continuum view offers the possibility to resolve the tension through structural separation of the two modes, the tension is not removed but shifted and the integration takes place at a higher level in the organization. In an orthogonal view, the conflicting demands can under certain conditions be reconciled. This leads to new possibilities where the management can create a context, which fosters ambidextrous behavior of the individual actors in the organization.

March's analysis was concentrated on the individual level. Deriving the conclusion that exploration and exploitation are automatically mutually exclusive on an organizational level is therefore not valid. The continuum view evolved from the tradition of post-modern management theory. Both notions, however, do not imply that structural separation is not a viable approach for achieving organizational ambidexterity. But there is no reason not to address both inside a common consistent theory framework. Some scholars even vote for a complementary, not an alternative view on structural vs. contextual ambidexterity (Birkinshaw & Gibson, 2004: 55, Raisch et al., 2009: 687). Additionally, there is evidence from a theoretical and empirical perspective, that structural and conceptual approaches are not that far apart. Güttel & Konlechner (2007: 370) note, that "even in organizations that perform a contextual ambidexterity, structural arrangements are necessary to enable and to maintain ambidexterity". Also Birkinshaw & Gibson (2004: 49) note, that

many successful companies such as HP, 3M, and Intel use a combination of both approaches.

*In conclusion, it was the complex nature of the underlying construct and the traditional notions of the different management perspectives that lead to the wrong assumption that structural and contextual ambidexterity are two distinct concepts and should not be mixed.*

## **6.2. Organizational Ambidexterity is Limited to Structural and Contextual Approaches**

It has already been noted, that the dominant approaches to achieve OA in the literature are structural and contextual ambidexterity. They are, however also the only ones. I purposely excluded punctuated equilibrium and network approaches to limit the scope of this study. They also do not play a big role in the literature and would have been distracting in this study. As OA is defined as the simultaneous pursuit of exploration and exploitation on an organizational level, they are still no viable solutions if applied to the organization as a whole. Nevertheless, the organizational ability to balance exploration and exploitation can also come from lower levels. Here, these approaches are still feasible and viable inside the definition. OA is defined over the attributes at an organizational level, which are outcomes of the underlying processes. No matter how they are achieved.

The underlying problem of dual conflicting demands of exploration and exploitation presents itself as a paradoxical relationship, logical coping strategies from paradox theory can be used as a lens to systematize the possible organizational responses. These coping strategies are based on different implicit assumptions about the nature of the paradox. Interestingly, they also show the development of the different approach of organizational ambidexterity along the idealized management perspectives. Paradox theory can help to overcome the oversimplification in research and acknowledge the complex, dynamic, diverse and ambiguous nature of organizational reality. In the case of OA it provides a way to distinguish, systematize and integrate different ambidexterity strategies and the underlying logics in one coherent framework.

Eisenhardt (2000: 703) defines paradoxes as “the simultaneous existence of two inconsistent states”. Smith & Lewis (2011: 382, 387) describe them as “contradictory yet interrelated elements, or dualities that exist simultaneously and persist over time”. Lewis (2000) presents a framework for studying paradoxes in organizations. To qualify as a paradox, an underlying tension as a source, a reinforcing cycle and a system to manage those must be present. The underlying constructed tension is given through the pressure to simultaneously explore and exploit while these two modes of learning seem to be conflicting. They are stuck in a self-reinforcing cycle as they are considered to be in a trade-off relationship. Focusing on one rises the danger of neglecting the other. Also a system to manage is present, as to overcome the trade-off and tap into the potential of the tension is the core idea of OA.

Building on the taxonomy of Poole & Van de Ven (1989), several scholars have outlined and linked coping strategies to the exploration exploitation concept (Sfirtis & Moenaert, 2010: 41; Jansen, 2005: 28-31; Jansen, 2008: 108-113; Schulze 2009: 33):

- ! Accepting (that it is not possible, learn to live with it);
- ! Resolving through structural separation (structuring);
- ! Resolving through temporal separation (prioritizing);
- ! Solving (accepting and embracing the paradox).

Müller-Christ (2011: 140-149) presents a similar framework where he differentiates between sequencing / pendulum (read: alternating between extremes), segmenting / hybrid (read: separation), and balancing / tightrope walking (read: integration).

Accepting the paradox means to compromise and take the shortcomings into account. Organizations accept that they are less efficient or less effective as they might be if they would be able to deal with the tension constructively (Jansen, 2008: 110). Other than compromising, organizations could also decide for one side and outsource the other. This would lead towards deconstructed value chains and

interorganizational networks. Smith & Lewis (2011: 395) describe the approach of these early theories as “A or B”? This reflects the passive, deterministic thinking of the classic management perspective, which postulated “one best way”.

Resolving represents a reactive way to deal with the tension, yet it is based on the assumption that the opposing forces cannot be reconciled and that they crowd each other out (continuum view). A structural separation means clarifying the levels of reference for exploration and exploitation (Poole & Van de Ven, 1986: 566). In an organization this can either happen horizontally or vertically. Smith & Lewis (2011: 395) describe this approach as “under what conditions A or B”? This was also the logic of Tushman & O’Reilly (1996) who started the field with the first notion of structural ambidexterity (O’Reilly & Tushman 1996; Smith & Tushman, 2005). In this approach, the ability to pursue exploration and exploitation simultaneously arises from structural modifications in the organizational architecture. The resources are allocated to the separate units. The result is a continuum of exploration and exploitation in which the organization moves. In a temporal separation, organizations skip between phases of exploration and phases of exploitation over time. This is called punctuated equilibrium approach (Tushman & Romanelli, 1985; Romanelli & Tushman 1994). As this implies a gradually transition from one extreme to the other, this approach is also based on a continuum view.

Solving the paradox is an active way to deal with the tension. Other than the first strategy of accepting, the tension is no more viewed as something necessarily dysfunctional. In a postmodern management perspective, ambiguity is tolerated and not avoided. This idea might sound new to western cultures, where consistency is valued extremely important, yet in eastern cultures contradictions are part of the daily life and are not a subject of confusions (Clegg et al., 2002: 486). In contextual approaches to ambidexterity, the tension is solved not in separating, but in integrating exploration and exploitation in one subunit (Birkinshaw & Gibson, 2004: 47). This is induced by a context that is characterized by coupling tight and loose aspects, which allow individual members to freely decide between the two modes (Güttel & Konlechner, 2009: 158-160). This approach is based on the orthogonal view, where exploration and exploitation are no more opposites but independent

mechanisms, which can be pursued simultaneously. In structural approaches, the tension is solved at the top where the division is made. Here, the tension is also solved at the lower levels. In Bartlett & Ghoshals managerial model (1993), tensions are solved at the frontline, where managers have to deal with short-term performance vs. long-term ambition (37-38). This also reflects Mintzbergs (1980) idea of a rather bottom-up approach as opposing to the top-down approach of e.g. Drucker (Pugh et al, 1964: 142-146) in modern management theory. As Poole & van de Ven (1989: 567) noted, the former approaches leave the basic assumptions intact. Solving introduces a new perspective and alters the existing concepts. The new approach of contextual ambidexterity is based on the assumption that exploration and exploitation are no more mutually exclusive. The approach of dissolving the opposition is also discussed under the notion of “duality-theory” (cf. Sutherland & Smith, 2011). Smith & Lewis (2011: 395) describe this approach as “how to engage in A and B simultaneously”?

*In conclusion, there is no theoretical argument to limit approaches of organizational ambidexterity to structural and contextual. In the past, however, ambidexterity scholars referred to simultaneously attending contradictory tensions without using the term paradox (Smith & Lewis (2011: 385). This led to the dysfunctional exclusion of paradox theory as an enriching perspective and the assumption that structural and contextual might be the only viable approaches to OA.*

### **6.3. Organizational Ambidexterity is Seen as a Unidimensional Construct**

Although March (1991) was talking about tensions in the plural, “exploration includes *things* captured by terms such as” (71, emphasize added), most researchers referred to exploration and exploitation as a single, one-dimensional construct. Exploration and exploitation have been accepted as the underlying construct of OA. However, it has been interpreted and conceptualized heterogeneously in the past research (see Fig. 8). As there is no real definition, except Marchs (1991) paraphrasing, each scholar faces the challenge of describing what exactly he understands and on what he applies exploration and exploitation.

LENS	CONCEPTUALIZATION		REFERENCE
	EXPLOITATION	EXPLORATION	
Learning	refinement and extension of existing competencies, technologies, and paradigms	experimentation with new alternatives	March 1991: 85
Strategy	enhance an organizations position in its present environment	new routines and strategies	Levinthal & March, 1993: 101
Learning	use and development of things already known	pursuit of new knowledge	Levinthal & March, 1993: 102
Mechanisms	local search, experimental refinement, and selection and reuse of existing routines	processes of concerted variation, planned experimentation and play	Baum et al. 2000: 768
Innovation	improvements in existing components and build on the existing technology trajectory	shift to different technology trajectory	Benner & Tushman, 2002: 679
Search	local search, high depth	distant search, high scope	Katila & Ahuja, 2002: 1184-1185
Critical tasks	operations, efficiency, incremental innovations	adaptability, new products, breakthrough innovations	O'Reilly & Tushman, 2004: 80
Competencies	operational	entrepreneurial	O'Reilly & Tushman, 2004: 80
Structure	formal, mechanistic	adaptive, loose	O'Reilly & Tushman, 2004: 80
Controls, rewards	margins, productivity	milestones, growth	O'Reilly & Tushman, 2004: 80
Culture	efficiency, low-risk, quality, customers	risk-taking, speed, flexibility, experimentation	O'Reilly & Tushman, 2004: 80
Innovation	technological innovation activities aims at improving existing market-product domains	technological innovation activities aimed at entering new product-market domains	He & Wong, 2004: 483-484
Abilities	Alignment (coherence among all the patterns of activities in the business unit; they are working together towards the same goals)	Adaptability (capacity to reconfigure activities in the business unit quickly to meet changing demands in the task environment)	Gibson & Birkinshaw, 2004: 209
Outcomes	Existing designs, current markets and existing distribution channels	new designs, new markets, new distribution channels	Jansen, 2005: 19
Performance	short-term benefits	distant in time	Jansen, 2005: 19
Mechanisms	refinement, production, efficiency and execution	search, variation, flexibility, experimentation, risk-taking	Jansen, 2005: 19
Knowledge	builds on broadening existing knowledge and skills	requires new knowledge and departures from existing knowledge	Jansen, 2005: 19
Product Innovation	use and refinement of existing knowledge, technologies, and products, has a more certain proximate benefits	search for new knowledge, use of unfamiliar technologies, and creation of product with unknown demand, uncertain and distant benefits	Greve, 2007, 945
Novelty	low technological and market novelty for the firm	high technological and market novelty for the firm	Greve, 2007, 947
Competencies	Building new competences	leverage current competences	Jansen, 2008: 99
Direction	local, inward	global, outward	Kölling et al., 2009, 277
Mechanism	routine use of existing knowledge	nonroutine search for new knowledge	Kölling et al., 2009, 277
Controlling	measurable	intangible	Kölling et al., 2009, 277
Intent	cost, profit	innovation growth	Kölling et al., 2009, 277
Intent	cost emphasis (efficiency)	breakthrough emphasis (adaptability)	Andriopoulos & Lewis, 2009: 701-704
Customer orientation	tight coupling (client satisfaction)	loose coupling (future opportunities)	Andriopoulos & Lewis, 2009: 701-705
Personal drivers	discipline (targets, explicit roles)	passion (challenge)	Andriopoulos & Lewis, 2009: 701-707
Rewards	tie rewards to individual or group, promote for making plans	tie rewards to total business performance, promote for innovative results, soft landing for risk takers	Schulze, 2009: 28
Strategy	focus, variance reduction	diversification, variation	Lavie 2010, p. 112
Business model	reproduction of the business model	creation of a new business model	Konlechner & Güttel, 2010, p. 31-36
Projects	derivative projects (cost reduction or enhancements of existing products or processes)	breakthrough projects (significant changes to existing products or processes)	Dover & Dierk, 2010: 50

**Fig. 10:** Selected conceptualizations and associations of exploitation and exploration

Source: compiled by the author

To a certain extent, this overview reveals, that the tensions subsumed under the exploration exploitation concept are just “old wine in new skins”. The notion of tension such as passion vs. discipline, diversity vs. cohesiveness, or the possibilities constraint paradox have been addressed widely by research outside the stream of OA (Andriopoulos & Lewis, 2010: 108-115; for a categorization of organizational tensions, see Smith & Lewis, 2011: 382-386, for an overview of paradoxes of change see Nasim & Sushil, 2011).

This view is also reflected by the fact that common approaches to ambidexterity do not eliminate the paradox; they rather shift it, split it or transform it. Structural ambidexterity, for instance, attempts to solve the exploration-exploitation tension by spatial separation. This, however, generates multiple new tensions as how to manage the trade-off between the autonomy of the sub-units and centralization in order to ensure knowledge sharing, or how to manage the ambidextrous TMT which holds everything together. Sutherland & Smith (2011: 534-536) note, that even organizational effectiveness and most other outcome variables are by nature paradoxical as they are multidimensional constructs which include dual attributes that can be contradictors (i.e. shareholder vs. stakeholder orientation, long term vs. short term orientation). “The simultaneous presence of opposites (i.e. paradoxes) is part of the everyday practice of management and not just an exception that can be willed away” (Clegg et al., 2002: 499).

Lavie et al. (2010) see the exploration / exploitation framework as “a lens for interpreting various behaviors within and across organizations” (109). But they also warn to examine completely distinct phenomena with this perspective (113). An extension to various tensions has already been done unintended by some scholars. There are a lot of studies which assess the antecedents of exploration and exploitation. Kang & Snell (2009: 79-83) and also Swart & Kinnie (2010: 74-75), for instance differ HR practices that either promote exploration or either promote exploitation. They do, however not address the question of how to combine the two in order to achieve OA. The tension was just shifted towards the antecedents. If one follows this logic, then balancing exploration and exploitation means balancing the

antecedents, which lead to the balance of multiple tensions which all, lead to exploration or exploitation.

*In conclusion, exploration and exploitation are the underlying construct of OA. They should, however, not be understood as a one-dimensional construct, rather than a higher-level framework for multiple organizational tensions.*

#### **6.4. Organizational Ambidexterity is Seen as an Organizational Level Construct**

Although March (1991) and Levinthal & March (1991) described the underlying tension of exploration and exploitation on an individual level; OA was later mostly understood and operationalized on an organizational level. Moreover, even if other levels of analysis were adopted (e.g. Gibson & Birkinshaw (2004) refer to ambidexterity on the business-unit level), multilevel studies are still rare.

Simsek (2009) published a paper titled “Organizational Ambidexterity: Towards a Multilevel Understanding”. He proposed a new multi-level model of OA including the organizational, interfirm, and environmental level (605-607). This perspective can be extended by also considering multiple levels of analysis inside the organization. As Agyris & Schön (1978: 20) noted, “there is no organizational learning without individual learning, and individual learning is a necessary but insufficient condition for organizational learning.” It might seem, that structural ambidexterity is rather connected towards macro and contextual rather towards a micro perspective as structural arises in the spatial separation (an organizational level construct) and contextual ambidexterity is rooted in the organizations’ members ability to balance exploration and exploitation (Gibson & Birkinshaw, 2004: 211). Both approaches have antecedents at organizational and at the individual and team level. Structural separation still relies on the team level ability of the senior managers to integrate both conflicting modes and contextual ambidexterity arises in the organizational level context, which allows individual members to switch between behaviors.

Taking the multidimensional nature of exploration and exploitation into account (see previous chapter), one can conclude that tensions are nested across all organizational levels (cf. Andriopoulos & Lewis, 2010: 118, “nested and paradoxical nature of innovation”). Gupta et al. (2006: 659) also note, that variations in the level of analysis may very well affect the basic assumptions of the construct. A process that is explorative on the individual level can already be considered exploitative on the team or organizational level.

*Concluding, OA might be defined as the simultaneous pursuit of exploration and exploitation on an organizational level. The antecedents of this ability are nested across all organizational levels. Applying an unilevel perspective cannot capture the full amount of complexity.*

#### **6.5. Organizational Ambidexterity is Defined as Simultaneous Appearance of Exploration and Exploitation**

As research on OA was burgeoning, a static perspective was preferred to facilitate the study of the exploration of the concept. Also the notion of OA as a *simultaneous* pursuit in differentiation to the punctuated equilibrium approach emphasized a static perspective. But emerging notion of OA as a *dynamic* capability implies, that the achievement of a balance is a dynamic, rather than a static alignment. Also the paradoxical relationship between the underlying constructs of exploration and exploitation constitutes itself over time (see 2.1.). This misled past researchers to define (and operationalize) OA as the simultaneous existence of a high explorative and a high exploitative orientation. This excludes the process character of the underlying constructs. Being able to deal with the tension is just half the way, as one also has to exploit what one explores. Recent examples make this more apparent. For example, Kodak recently announced severe financial problems. They were great at exploiting their existing business as they were dominating the market for conventional photography. Additionally, they were highly explorative because they were the first to introduce digital photography and digital photocopying. However, they failed to exploit their innovations and left the market to other competitors, a mistake they later tried to catch up with, but finally failed (Waters & Nuttall, 2012). Existing conceptualizations leave the interaction process

out. High levels of exploration and high levels of exploitation are necessary, but not a sufficient condition for organizational ambidexterity. The “streams of innovation” can only be assessed over time.

On a conceptual level, the common input-process-output models used for most variances can be criticized in presuming a reverse causality. The outcome (performance) can also be interpreted as organizational slack, which is a necessary condition for building OA. The antecedents (i.e. context, culture, ambidextrous leadership) can be seen as an outcome of OA. Raisch et al. (2009: 689) note, that adopting time, a research lens would allow deeper investigation in the underlying dynamic processes. A circular view would represent the organizational reality more adequately and also give insights into the emergence of OA. There is to date no empirical study that would adopt a dynamic perspective. Some (e.g. Jansen, 2005) use a lagged research design to establish causality, but longitudinal research is still rare.

*In conclusion, the predominant static perspective in OA research has limited the progress as questions regarding the process character of ambidexterity have not been raised yet. This limits our understanding of OA as we do know very little about how it evolves over time, or how it can be developed or maintained.*

## **7. Rejuvenation – Towards A New Understanding and a Research Agenda**

### **7.1. A New Understanding of Organizational Ambidexterity**

Before proceeding towards the outline of new research paths, the extensive argumentation of the previous chapter will be synthesized to a new understanding of OA that will serve as a base for future efforts in the field.

The preliminary definition as outlined in chapter 2.3. can be taken as a starting point. The outlined dysfunctional assumptions are partly reflected in the definition and will be revised, or if necessary added. As a first step towards a rejuvenation of OA, the new definition is proposed as follows:

*OA is the organizational-level ability to successfully interact between simultaneously high levels of exploration and exploitation, where exploration and exploitation are understood as a collective term for organizational tensions. OA is based on the organizational ability to cope with multiple paradoxical tensions across all organizational levels.*

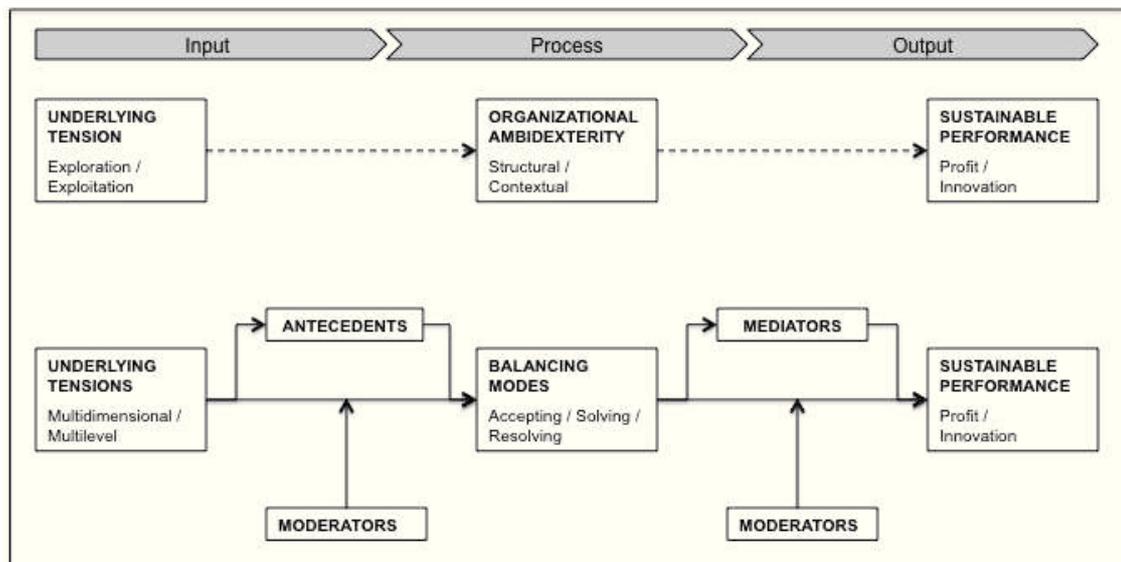
### **7.2. A Roadmap for Future Research**

Based on the analysis of the previous chapters five possible paths for fruitful future research will be outlined. They are different in the extent to which they depart from the existing model or rather yield towards a completely new understanding. They are meant to be complementary not as alternatives, as each path presents a potential for enhancing our understanding of OA but all are based on the new definition outlined above.

#### **7.2.1. Extending the Existing Model**

As discussed in part II of this paper, most of the empirical work has been done inside an input-process-output view on the OA construct. Chapter 5 tried to aggregate existing empirical knowledge on the antecedents, moderators and outcomes of structural and organizational ambidexterity. There are still a lot of gaps in knowledge to address. Furthermore, it would be interesting to see whether the ex-

isting findings withhold a replication in another sample. For contextual ambidexterity, for instance, research concentrated to organization were a trade-off was inherent and very obvious such as R&D organizations where they have to deal with the tension between applied and basic research (Güttel & Konlechner, 2007: 361). This might not be the case in other industries or types of organizations. Before trying to extend the existing model, it has to be adapted to the new understanding of ambidexterity outlined above. The driving tensions are no more limited to exploration and exploitation but to multiple nested tensions across the organization. What was former conceptualized as structural or organizational ambidexterity is no longer limited to this approaches but to all modes of balancing. The outcomes have not changed. The relationship between the single constructs can be direct, mediated, or moderated. Although not shown in Fig. 7., also more complex relationships as mediated moderations, feedback loops and others should be considered.



**Fig. 11:** An extended conceptual model of OA

*Source:* compiled by the author

It is not possible to present an extensive and complete list of propositions for future research, however, a selection of the potentially most feasible ideas is presented in the following.

The existing research has produced a wide amount of different antecedents of either structural or contextual ambidexterity. Future scholars should consider examining the interplay between these. Would there be an interaction or are they independent? Are they cross-fertilizing or cannibalizing? They could also be extended by concepts from related fields such as sociology or psychology. How do, for instance, time structures (prospective / retrospective) affect the pursuit of OA (Orlikowski & Yates, 2002)? There is also a need to dig deeper into the antecedents of ambidexterity on an individual level. How do e.g. different regulatory foci (cf. Brockner & Higgins, 2001) or goal orientations (cf. Porath & Bateman, 2006) affect the individual capacity to balance contradictions? A first tentative proposition could be that prevention focus and learning goal orientation yield more towards exploitation, whereas individuals with a predominant promotion focus and a performance goal orientation are more prone to exploration.

Devins & Kähr (2010: 65) claim, that the concept has been pushed too far by certain researchers. They call for more research on the boundary conditions under which OA can lead to long-term success. The relationship between successful balancing (OA) and outcomes has fairly been unattended in the existing studies. Also Pfeffer (2005: 447) notes: "Theory building should be about finding out the conditions under which they are false, and this can be accomplished by stretching theories to their limits". This is in line with Christensen & Raynor's (2003) call for more study of failure in order to understand the cause and effect links underlying the phenomenon. Contingency variables to consider could be for instance strategy types, business model, industry, firm size, production type, or general market conditions (hausse / baisse). A completely new view is introduced by Proff & Haberle (2010) who argue that OA has rather to be limited than fostered to reduce the coordination cost associated with it. They vote for a systematic dynamic management to limit the cost to phases of radical environmental change. (p. 109-111). This breaks the never criticized assumption, that OA is something desirable and achievable underlying most studies. Here it is considered something unavoidable that has to be managed as efficient and as fast as possible. Future researchers have to rethink this and also take into consideration that OA might not always and under all conditions be positive for the company.

Broadening the range of success factors can also extend the model. Future studies should not only rely on hard factors, but also consider soft factors like customer satisfaction (as done by Sarkees & Hulland, 2009: 46). Schulze (2009: 65), for instance, gives credit to the multidimensional nature of OA and deconstructs organizational performance in operational and strategic performance. Operational is the rather short-term perspective and assess how efficient and profitable an organization manages its day-to day business. Strategic performance accounts for the current and perspective market position in comparison to its rivals.

### **7.2.2. Efficiency of Structural and Contextual Approaches**

One way of addressing the dysfunctional assumption of structural and contextual ambidexterity being two separate constructs is to treat them as “two sides of the same medal”. As most studies just concentrated on one of the two, future researchers could try to investigate in the efficiency of the approaches under various circumstances. Studies should try to explore the contingency factors under which structural approaches are favorable and under which conditions contextual approaches are. Extending the possibilities towards the other coping strategies of paradox theory could further enrich this approach..

*The existing* research tends to focus on just one form of ambidexterity. A notable exemption is Jansen’s (2005) dissertation, which includes also a test of structural vs. contextual ambidexterity and who finds that in his restricted sample, structural ambidexterity was more positively related to performance than conceptual (Jansen, 2005: 5, 129). The same author later also proposed that the effectiveness of different approaches might be contingent upon internal an external idiosyncrasies of the organization (Jansen, 2008: 114).

A possible approach would include assessing the salient characteristics of each approach, e.g. what are the strengths and weaknesses. Structural ambidexterity has advantages through its clear separation and specialization but therefore problems coordination the integration and knowledge transfer of the separate units. Contextual ambidexterity promises synergies through pursuing exploration and exploitation together at a individual level but also faces a human challenge as a

ambidextrous context sets high demands regarding the individual organizational members. Based on these exemplary presumptions, possible propositions could be that in knowledge intense business models, which are based on delivering cutting-edge innovations (e.g. consulting firms, universities), contextual approaches are favorable because the advantages are salient, but the downsides are of not great importance. In reverse, one could raise the proposition that in less knowledge intense business models where focus is more on a steady quality (e.g. fast-food restaurants), structural ambidexterity is favorable because the individual characteristics fit the requirements of the organizational context.

Other possible contingency factors might be whether the organizational structure and the manner of value creation allow for structural separation or rather for contextual integration. Contextual solutions might, for instance, be superior in service industries, where individuals have to deal with customers and face the contradictory forces. Whereas in manufacturing firms a division of the work and also between exploration and exploitation is easily possible. In the existing literature, structural ambidexterity has mainly been investigated within big organizations like IBM (O'Reilly & Tushman, 2007), BMW (Raisch, 2008), Nestlé (Probst et al., 2008), Novartis (Smith & Tushman, 2005), Johnson & Johnson (Tushman & O'Reilly, 1996). Contextual ambidexterity was addressed in studies that dealt with smaller organizations, like single business units (Gibson & Birkinshaw, 2004) or R&D organizations (Güttel & Konlechner, 2007). One could infer, that structural solutions require a certain size and that thus organizational size might be an important contingency factor.

### **7.2.3. Multilevel and Multidimensional Understanding of Ambidexterity**

Whereas the former proposed research path was focused on finding the contingencies that separate the different approaches to ambidexterity, this path takes a rather dialectic approach. Yet, it still builds on the previously developed assumptions that certain ways to balance tensions are most efficient under certain conditions.

The underlying tension of exploration and exploitation can just be seen as an overarching construct. In the organizational reality, there multiple tensions have to be managed in parallel, because each of them can appear at multiple levels throughout the organization. In order to cope with the tensions, the previously introduced coping strategies can be applied. Which strategy should be applied depends on the nature of the paradox and the idiosyncratic context it is embedded in. All together, however, they constitute the organizational level ability simultaneously to host multiple contradictions that can be subsumed under the notion of exploration and exploitation (Smith et al., 2010: 450).

Combining different ambidexterity strategies at different levels yields towards hybrid ambidexterity (Cao et al., 2010). Simple combinations of structural and contextual separation can be found, for instance, at Toyota. They separate in a rather exploration pronounced R&D and in rather exploitation pronounced manufacturing units. Still, the overall culture of contradictions encourages line workers to think about exploration and to be ambidextrous inside the structural separation (Adler et al., 1999).

The exemption made at the beginning of this study that excluded the punctuated equilibrium approach was drawing upon the classic understanding of the approach on an organizational level. Temporal separation, however, can be a fruitful strategy on lower organizational levels as well as perfectly combinable with structural or contextual approaches. Adler et al., (1999: 46) described the case of quality circles, where parallel structures allow individuals to move temporarily between organic and bureaucratic structures. Brunner et al. (2010: 1-3) also proposed perturbation as a new cyclical approach. Exploration naturally leads to exploitation, because what was explored ultimately has to be exploited. Exploitation is then purposely perturbed by an induced exogenous shock that leads to exploration again. For example, in the case of project teams first a new idea is developed (exploration), then possibly implemented (exploitation) and then the team is terminated and reconfigured when the project goal is fulfilled. In a wider perspective (multiple, timely offset teams) this would already constitute ambidexterity in a unit or an organization.

As proposed by Lavie & Rosenkopf (2006: 797-799), the concept of exploration / exploitation can also be extended from intra- to interorganizational learning. Although methods for balancing in interorganizational relationships are no longer captured by the construct of OA, possibilities exist that achieve a quasi-ambidextrous organization through externalizing and therefore separating conflicting processes. This would yield towards an “accept” coping strategy. In fact, the step from loosely coupled subunits in a big company and interorganizational relationships among smaller companies seems not to far (Wessel et al., 2010). The mechanisms by which exploration and exploitation are balanced and integrated are similar. New insight could arise from extending the perspective towards this direction (cf. Kaupilla, 2010: 283-285).

If OA is then finally understood as the organizational ability to manage paradoxes, it can be perceived as a higher order dynamic capability that governs the multiple integration routines. This notion has appeared in the recent literature before (Güttel & Konlechner, 2007; Sifirtis & Moenaert, 2010). Güttel & Konlechner (2007: 369-371), for instance identify a reflection mode, which balances internal learning activities in relation to external environmental expectations, a conflict regulation mode that balances the conflict arising from diverse learning modes, and finally in integration mode that enables the usage of the outcomes of explorative and exploitative learning activities. Similar, Andriopoulos & Lewis (2009) found that in order to achieve OA, three nested tensions (paradoxes of innovation) must be managed: Strategic intent (profit vs. breakthroughs), customer orientation (tight vs. loose coupling), and personal drivers (discipline vs. passion). Each can be managed individually by differentiating and integrating mechanisms. By blending differentiation and integration management of paradoxes, the management itself becomes ambidextrous (Andriopoulos & Lewis, 2009: 707-709).

There was, however, no notion which extended the perspective to all logically possible coping strategies across a multilevel und multidimensional perspective. This new understanding of OA is still in a conceptual stage. Although anecdotal evidence can be found in the previous literature, no real empirical investigation is has

been carried out yet. Due to the high complexity, future scholars should consider qualitative explorative methods to gain a richer insight and formulate new theories.

#### **7.2.4. Practical Research and Limitations**

OA is up to now mainly a topic of academic interest. O'Reilly & Tushman (2011: 7) assess that "although theoretically compelling, research on dynamic capabilities and ambidexterity is still in an early stage". The concept is convincing for academic scholars, but it has not yet found its way on the agenda of practitioners. One of the reasons is that most studies do not address questions central to real managers, or do not pay a particular interest in generating managerial implications. Research has so far mainly been concerned with understanding and describing the phenomenon. There are no studies that would address questions of real practical relevance as how to implement, achieve and sustain ambidexterity. This shortcoming is also due to the fact that most studies adopted a static perspective so far and were thus not able to address matters like this.

Questions central are how to build OA in an organization. What are hurdles and barriers? What specific kind of training is needed to prepare employees for this challenging task. How to create ambidextrous visions and a culture that embraces tensions? Is it better to, for example, first separate structural, then separate temporal on a lower level and then to implement the context? Managers do in general not care too much about management theory (although they should!), they rather expect a "toolbox" of methods that work. Once achieved, how to ride the wave and keep OA alive? Are there special challenges in incumbent firms as opposed to young growing start-ups?

A second neglected, yet practical highly relevant issue concerns the possible dysfunctions of OA. Studies investigating in "the dark side" of OA should address questions as how do employees deal with the high demands of an ambidextrous work context. Not every employee is able or comfortable "wearing more than one hat" (Birkinshaw & Gibson, 2004: 49). How to develop ambidextrous leaders in a structural ambidextrous firm? The influence of HR practices will be most critical in answering these questions. First attempts to link OA and HR have already been

made (Litz & Klimecki, 2005; Knag & Snell, 2009; Swart & Kinnie, 2010), but they all do not answer the question how HR can contribute to OA. The concept holds the big danger of being overdosed. This happens in a similar case in the TPS and lean manufacturing euphoria. Adler et al. (2009: 109-110) report the anecdote of Taiichi Ohno's nickname Taiichi "Oh no!". A one-sided focusation on the possible positive outcomes of OA can likely forget the high demands being created for individual actors. A possible moderator to take into account here are the individual growth-need strengths (cf. Graen, 1986).

Introducing the abstract idea of OA to a whole organization might seem threatening for some managers. It would be helpful to further outline the application in special delimited and concrete cases. Birkinshaw & Gibson (2004: 49), for instance, indicate possible applications to the case of key account management where individuals have to deal with the trade-off between focusing on current customers to meet the quotas or nurturing future possibilities with slightly different needs. Taking this idea further one could identify the tension between service and sales goals in professional service firms. Studying ambidexterity in such a specialized context would not just deliver a compelling case to bridge the gap between theory and practice, it could also yield rich insight regarding the micro-level mechanisms of individual ambidexterity.

A question central to practitioners might also be about how to exactly balance exploration and exploitation. Schulze (2009: 64) concludes, that the distribution depends on external environmental factors, but does not give any further directions on how to assess the "right" balance. Only Suzuki & Methé (2011) have made a first attempt in this direction. They found for their sample of pharmaceutical firms that the optimal level of ambidexterity lay by allocating 1.5 times more development resources to exploitative product than to exploratory ones (49). In any case, balancing will rarely be optimal at a point where both are equal. "But even though balancing innovation strategies is seen as a necessary remedy, we believe that every organization inherently tilts to one or the other extreme" (Prange & Schlegelmilch, 2010: 48). Executives in real live organization will need to know how to assess in which direction to go.

### **7.2.5. Leading for Ambidexterity and Ambidextrous Leadership**

The questions how ambidextrous organizations can be managed was one that appeared most frequently in recent research. Questions of leadership played a dominant role in the different studies analyzed in this thesis. Despite the comparable large body of literature, there are still some critical gaps in knowledge that offer possibilities for contribution.

Although addressed frequently, most studies remain by describing the tasks, the ability or the demands facing a leader of ambidextrous organizations. O'Reilly & Tushman (2004: 81), for instance, note: "combining the attributes of rigorous cost-cutters and free-thinking entrepreneurs while maintaining the objectivity required to make difficult trade-offs, sure such managers are a rare but essential breed".

The few studies that really address the question of which leadership behaviors facilitate ambidexterity describe a new leadership style called ambidextrous leadership (Rosing et al., 2010, 2011; Probst et al. 2011, Bledow et al., 2011). But it is not clear if ambidextrous leadership is understood as a leadership behavior that enables OA or a leadership behavior which is ambidextrous (in the sense of combining two contradictory modes) itself.

Rosing et al. (2011: 10) distinguish opening and closing leadership behaviors. Established leadership styles such as transformational or transactional leadership both have closing and opening aspects (16). In order to achieve follower ambidexterity behavior, an ambidextrous leadership has to be shown. This is combining opening and closing behaviors and the ability to switch between them. (11-13). Probst et al. (2011) describe different leadership behaviors that enable OA. The top management, for instance, has to grant autonomy but still staying involved, middle managers have to provide a vision while ensuring execution, line management has to embrace the diversity while acting together, and finally the HR management has to promote and enable ambidextrous leadership (Probst et al, 2011: 4-8). Also Bledow et al. (2011) present their framework of ambidextrous leadership. They state, that, as the importance of different leadership behaviors varies

not only over time but also over context, a leadership for innovation has to take different shapes according to contextual conditions. They apply this logic to several aspects of leadership as composing teams, dividing tasks, decision making and motivation (Bledow et al., 2011: 48-52).

The bottom-line of all ambidextrous leadership approaches is that leaders have to switch their behavior according to the context. This closely resembles the existing theory of situational leadership (Hersey & Blanchard, 1977). This was highly criticized as it missed the critical notation of how leaders switch between different behaviors and how leaders can effectively recognize and adapt their leadership behavior to the different situations and subordinates. Ambidexterity scholars, however, have also not yet addressed this question.

This is a major field of contribution for future scholars. How can this switching be archived on an individual (managerial) level? What are possible personality factors? Which situational or training can influence this ability? Are there any personality variables that play a role and in which context do they become salient (trait activation theory, cf. Tett & Guterman, 2000)?

## 8. Ambidexterity as a Chance

To illustrate the meaning of OA and to catch the essence of this thesis, the analogy of the two-faced roman god Janus can be applied (O'Reilly & Tushman, 2004: 74). Janus had two pairs of eyes, one looking back to the past and one looking forward towards the future. Likewise, this thesis analyzed and synthesized the past research on OA and diagnosed a reification of the concept. In a second step, future research paths were explored which will help to rejuvenate OA.

This study expresses itself in several different ways. Firstly, it presents the most comprehensive view of the OA field. Secondly, it provides an in-depth analysis of the underlying problems, backed up with theoretical foundations from related streams of research. Finally, it proposes five valuable strategies to address the gaps in existing research and help ambidexterity to fulfill its promise of a new paradigm for the field of organizational studies.

Research on OA started with March's (1991) seminal article and has just passed its 20<sup>th</sup> birthday. The overall goal of this thesis was, figuratively speaking, to help the still adolescent construct to become mature. The answers to the questions outlined in the introduction can be summarized as follows:

- ! First of all, the current state of the art presents itself as fuzzy and highly fragmented. The research is split in specialized fields, which lack of coherence and a shared definition. An aggregation of knowledge in one model is not possible.
- ! Secondly, the reasons for this development are five inherent assumptions that limit the progress of the field. A new multilevel and multidimensional understanding of OA that covers the dynamic and paradoxical nature of the underlying construct was proposed to overcome this reification.

! Thirdly, five distinct paths of research are proposed that describe the main tasks for future researchers. The first one is integrating and extending existing findings, the second is, assessing the efficiency of different approaches the third is further developing the new multilevel and multidimensional understanding, the fourth is to engage in more practical relevant research and taking the dynamic nature of OA into account, the fifth is, to further investigate in the critical role of ambidextrous leadership.

Probst and Raisch (2005) examined organizational crashes and bankruptcies, and found a certain pattern, called “the logic of failure” (90). Failure of an organizations is generally caused by too excessive or too weak growth, too rapid or too slow changes, too autocratic or too participative leadership. The key to sustained success is finding a balance between these competing factors (Probst & Raisch, 2005: 99-102). OA picks up exactly this idea and shows a way how to constructively cope with tensions and achieve a balance. The strategy of “flying the plane while rewiring it” (Judge & Blocker, 2008: 915) is a challenge, but it is also a chance to achieve a sustainable organizational success. The role of research is to examine the processes underlying this strategy and to finally create recommendation for practitioners, which help to decrease risks and increase opportunities trough applying relevant knowledge. So far, scholars were not able to live up to this expectation. This study attempts to turn this trend around and set a new starting point for future researchers to build upon.

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Author	Year	Title	Key Question / Goal	Key Findings/ Contributions
<b>REVIEWS</b>				
Raisch & Birkinshaw	2008	Organizational Ambidexterity: Antecedents, Outcomes, and Moderators	Review various literature streams and develop a comprehensive model to systematize the existing knowledge.	Outline literature streams that contributed to the idea of OA as well as analyzing existing studies in an antecedents, moderators, and outcomes framework. Avenues for future research are suggested.
Raisch et al.	2009	Organizational Ambidexterity: Balancing Exploitation and Exploration for Sustained Performance	Introduction to the Organization Science special issue on OA. Four central tensions in the field of OA research are explored.	Four central tensions in the field are outlined: Differentiation vs. integration, individual vs. organizational level, static vs. dynamic, and internally vs. externally.
Simsek et al.	2009	A Typology for Aligning Organizational Ambidexterity's Conceptualizations, Antecedents, and Outcomes	How can OA's conceptualizations be put into a typology to further specify the construct?	Four archetypes of ambidexterity can be distinguished along a temporal and a structural dimension: Harmonic, cyclical, partitioned, reciprocal.
<b>FOUNDATIONS</b>				
March	1991	Exploration and Exploitation in Organizational Learning	What is the relation between explorative and exploitative learning?	Examines the complications in allocating resources between exploration and exploitation and the risk inherent in a one-sided orientation.
Levinthal & March	1993	The Myopia of Learning	What are the limitations of organizational learning?	Three forms of learning myopia that hinder exploration as well as strategies to overcome the overly focussedness on exploitation.
Adler et al.	1999	Flexibility Versus Efficiency? A Case Study of Model Changeovers in the Toyota Production System	How does the (superior) TPS overcome the trade-off between flexibility and efficiency?	In the TPS four organizational mechanisms are used to manage the efficiency vs. flexibility paradox: Metaroutines, partitioning, switching and enrichment. Of particular interest is the contextual reinforcing role of training and trust in administrative structures, procedures, and rules.
Katila & Ahuja	2002	Something old, something new: A longitudinal study of search behavior and new product introduction	How do firms search or solve problems to create new products?	A significant effect of the interaction term of depth and scope suggests that at least some organizations are able to engage in both search approaches simultaneously. The most fruitful approach lies in the intersection of these two.
Gupta et al.	2006	The Interplay Between Exploration and Exploitation	What do exploration and exploitation mean? Are they two ends of a continuum or orthogonal to each other? How should a balance be achieved, through punctuated equilibrium or ambidexterity?	Introduce the distinction of the continuum and orthogonal view underlying the exploration/exploitation construct and state, that a continuum view leads to sequential solution of the trade-off, whereas an orthogonal view allows structural solutions and therefore ambidexterity.
Adler et al.	2009	Perspectives on the productivity dilemma	Synthesize several recent perspectives on the dynamics of the productivity dilemma.	In conclusion, the several perspectives are generally consistent in emphasizing the importance of coexisting with contradictions. An active embrace of tension and conflict as shown in the TPS can be understood as a way to disrupt or perturb the organizational equilibrium, shaking apart tightly coupled subsystems and breaking the hold of dynamic conservatism.
Lavie et al.	2010	Exploration and Exploitation Within and Across Organizations	Review, criticize, and provide directions for future research on the concept of exploration / exploitation	Although the concept of exploration / exploitation has been applied and discussed by various scholars, more research on the fundamental terms and concepts associated with these activities is needed.

AUTHOR	YEAR	TITLE	KEY QUESTION / GOAL	UNDERLYING CONSTRUCT	LEVEL OF ANALYSIS	TYPE OF OA	RESEARCH DESIGN	KEY FINDINGS / CONTRIBUTIONS
Tushman & O'Reilly	1996	The Ambidextrous Organization: Managing Evolutionary and Revolutionary Change	How can evolutionary and revolutionary change be managed over time? How can an organization overcome inertia?	Incremental / Discontinuous Innovation	Organization	Structural	Qualitative	Development of the idea of ambidextrous organizations. Structural, cultural and leadership requirements of ambidextrous organizations are discussed in detail.
Benner & Tushman	2003	Exploitation, Exploration, and Process Management: The Productivity Dilemma Revisited	How can the negative effects of process management on innovation and change be buffered without limiting the positive effects?	Exploration / Exploitation	Organization	Structural	Conceptual	In ambidextrous organizational designs, increases in process management practices increase exploitative innovation but do not dampen exploratory innovation. Also increases in process management practices will enhance responsiveness and performance during eras of incremental change but will not effect responsiveness or performance during eras of technology advancement.
Dursin & Todorova	2003	The Ambidextrous Organization: Managing Simultaneously Incremental and Radial Innovation	How do organizations manage the contradiction between radical and incremental innovation?	Radical / Incremental Innovation	Organization	Structural	Qualitative	Both, incremental and radical innovation involve process blindness, rule-guided responses in the approach to innovation and unintended capability mutations. A real ambidextrous structure is not possible.
Birkinshaw & Gibson	2004	Building Ambidexterity into an Organization	How can contextual ambidexterity be achieved?	Alignment / Adaptability	Unit	Contextual	Quantitative	OA can not only be achieved through structural separation, but also by developing a high-performance context which is characterized by a strong performance management as well as a high level of social support.
Gibson & Birkinshaw	2004	The Antecedents, Consequences, and Mediating Role of Organizational Ambidexterity	Introduce the new concept of contextual ambidexterity and test the relationship between context and performance moderated by ambidexterity.	Alignment / Adaptability	Unit	Contextual	Quantitative	Contexts characterized by a combination of stretch, discipline support, and trust facilitate contextual ambidexterity. Ambidexterity fully mediates the relationship between context and firm performance.
He & Wong	2004	Exploration vs. Exploitation: An Empirical Test of the Ambidexterity Hypothesis	Can the theoretical positive effect of ambidexterity on firm performance be empirically verified?	Exploration / Exploitation	Organization	Structural	Quantitative	Interaction between exploitation and exploration is positively related to sales growth.
O'Reilly & Tushman	2004	The ambidextrous organization	How can organizations simultaneously pursue modest incremental innovations and more dramatic breakthrough innovations?	Exploration / Exploitation	Organization	Structural	Qualitative	Only spatial (ambidextrous) organizational structures support the creation of new break through innovations. Other designs (cross functional, unsupported teams) are not successful.
Jansen	2005	Ambidextrous Organizations, A Multiple-Level Study of Absorptive Capacity, Exploratory and Exploitative Innovation and Performance	Enhance the understanding of how ambidextrous organizations successfully cope with exploratory and exploitative innovations across organizational units.	Exploration / Exploitation	Multilevel	Structural / Contextual	Quantitative	Firm-level ambidexterity has a positive influence on firm performance. This relationship is stronger if heterogeneity in each unit is high. Low heterogeneity has no influence on the relationship.
Auh & Menguc	2005	Balancing exploration and exploitation: The moderating role of competitive intensity	What is the role of competitive intensity on the exploitation/exploration - performance relationship?	Exploration / Exploitation	Organization	Structural	Quantitative	Defenders benefit from exploration and prospectors benefit from exploitation as competition increases.
Jansen et al.	2005	Exploratory Innovation, Exploitative Innovation, and Ambidexterity: The Impact of Environmental and Organizational Antecedents	How do environmental and organizational factors influence the ability of a business unit to successfully be ambidextrous?	Exploration / Exploitation	Unit	Structural	Quantitative	Multiturn firms develop ambidextrous unit in order to compete in dynamic competitive environments. Units with decentralized and densely connected social relations are able to act ambidextrous.
Litz & Klimecki	2005	Balanced Contracting in the Ambidextrous Organization	How can HRM contribute to the challenge of balancing flexibility and stability simultaneously by generating a portfolio of employees holding different career aspirations?	Flexibility / Efficiency	Individual	Structural	Conceptual	In a structural ambidextrous organizations, the different units require different kinds of employees. This is also reflected in the psychological contracts. An ambidextrous organization has to offer both, relational contracts and balanced contracts. Relational contracts reflects a long term commitment, moderate salary and loyalty. A balanced contract reflects long working hours, high compensation and high fluctuation.
Martiniich	2005	Communicating the Vision in an Ambidextrous Organization: Connecting with Both Sides of your Brain	What is the communication style of leaders in successful structural ambidextrous firms?	Exploration vs. Exploitation	Organization	Structural	Qualitative	Successful leaders have to be aware of the different needs of operators and innovators, value both sides and give them a vision which unites them.

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Van Looy et al.	2005	Organizing for Continuous Innovation: On the Sustainability of the Ambidextrous Organization	Under which conditions will ambidextrous firms with their diversified resource allocation pattern be able to outperform focused firms?	Exploration / Exploitation	Organization	Structural	Experimental	Ambidextrous organizations are superior compared to focused organizations if an extended time frame is adopted. Furthermore, interface management practices at cross-fertilization have to be introduced in order to take advantage of the synergies of the underlying technologies. Joint pursuit of exploratory and exploitative orientation positively affects performance.
Lubatkin et al.	2006	Ambidexterity and Performance in Small-to Medium-Sized Firms: The Pivotal Role of Top Management Behavior Integration	What are the antecedents and consequences of OA in small-to-medium-sized firms? What's is the role of the TMT?	Exploration vs. Exploitation	Organization	Structural	Quantitative	Support for the ambidexterity hypothesis. Organizations are indeed using paradoxical, dual models of innovation simultaneously.
Grover et al.	2007	Exploring Ambidextrous Innovation Tendencies in the Adoption of Telecommunication Technologies	Do organization in the telecommunication industry balance their innovation effort and if so, do they use semi-structures or OA?	Radical / Incremental	Organization	Structural	Quantitative	Organizational ambidexterity is governed by high-order dynamic capabilities, that can be perceived as balancing routines and thereby fulfill functions of conflict regulation, reflection, and integration.
Güttel & Konlechner	2007	Dynamic Capabilities and Competence Obsolesce: Empirical Data from Research-Intense Firms	How are dynamic capabilities shaped in ambidextrous organizations to prevent obsolesce (ambidextrous learning)?	Exploration / Exploitation	Organization	Contextual	Qualitative	Organizations with a high level of exploitation and medium to high level of exploration perform significantly better in dynamic environments.
Tay & Lusch	2007	Agent-Based Modeling of Ambidextrous Organizations: Virtualizing Competitive Strategy	How do ambidextrous and nonambidextrous organizations compete in dynamic markets?	Exploration vs. Exploitation	Organization	Structural	Experimental	Superior business-unit performance is achieved through building a rational set of systems and processes that collectively define a context that allows the transcending capabilities of alignment and adaptability to flourish simultaneously.
Bolinnao	2008	A Framework for Analysis of Ambidexterity and Performance in Small-to-Medium-Sized Firms	How does the relationship between a context characterized by high social context and high performance management lead to firm performance?	Alignment / Adaptability	Unit	Contextual	Conceptual	There are distinct ways organizations can coordinate exploration and exploitation. Accepting (compromising / outsourcing), solving (structural or temporal separation) and resolving (balancing).
Jansen	2008	Combining Competence Building and Leveraging: Managing Paradoxes in Ambidextrous Organizations	Discuss paradoxical situations in ambidextrous organizations and suggest ways how organizations might balance competence building and leveraging.	Exploration / Exploitation	Organization	Structural / Contextual	Conceptual	Senior teams shared vision and contingency rewards are associated with a firm's ability to combine high levels of exploration and exploitation. CEO's transformational leadership moderates the relationship between the effectiveness of senior team social integration and contingency rewards.
Jansen et al.	2008	Senior team attributes and organizational ambidexterity: The moderating role of transformational leadership	What is the role of senior team attributes and leadership behaviors in reconciling interests among senior team members and achieving organizational ambidexterity	Exploration / Exploitation	Unit	Structural	Quantitative	Organizational capacity for change and moderators of strategic ambidexterity.
Judge & Blocker	2008	Organizational capacity for change and strategic ambidexterity: Flying the plane while rewriting it	Identifying potential antecedents and moderators of strategic ambidexterity.	Exploration / Exploitation	Organization	Structural	Conceptual	The extent of proactive market orientation (lead-the-customer) has an positive influence exploration whereas a responsive market orientation (customer-led) has a positive effect on exploitation. Market orientation in general appears to be the key to pursue radical and incremental innovations separately and simultaneously.
Li et al.	2008	The nature of market orientation and the ambidexterity of innovations	What is the linkage between different kinds of market orientation and OA?	Radical / Incremental Innovation	Organization	Structural	Quantitative	Ambidexterity does not have an significant influence on firm performance, neither for prospectors, nor for defenders. Market orientation, however, seems to moderate the relationship positively.
Menguc & Auh	2008	The asymmetric moderating role of market orientation on the ambidexterity-relationship different for the strategic types of prospectors and defenders	Is the ambidexterity-performance relationship different for the strategic types of prospectors and defenders?	Exploration vs. Exploitation	Organization	Structural	Quantitative	In order to achieve OA, three nested tensions (paradoxes of breakthroughs), customer orientation (tight-loose coupling), and personal drivers (discipline-passion). Each can be managed individually by blending differentiating and integrating mechanisms.
Andriopoulos & Lewis	2009	Exploration-Exploitation Tensions and Organizational Ambidexterity: Managing Paradoxes of Innovation	Evidence from five leading product design firms about how they achieve OA.	Exploration / Exploitation	Multilevel	Structural / Contextual	Qualitative	

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Cao et al.	2009	Unpacking Organizational Ambidexterity: Dimensions, Contingencies, and Synergistic Effects	How can the ambiguity regarding the OA construct be resolved?	Exploration / Exploitation	Organization	Structural	Quantitative	OA can be unpacked into a balanced dimension and a combined dimension regarding the simultaneous pursuit of exploration and exploitation. A combination of both can unleash the full potential and create synergies Three propositions: 1. There is a positive relationship between TMT behavioral integration and TMT behavioral complexity. 2. TMT behavioral complexity is positively related to organizational ambidexterity. 3. Contextual ambidexterity positively moderates the relationship between TMT behavioral complexity and OA Contextual ambidexterity is enabled by the existence of a broad skill base of employees, by a common frame of reference, and by a similar level of background knowledge among employees. Fluid project structures and semistructures, as well as commonly shared cultural values and norms provide stability for concurrent performance of exploration / exploitation.
Garnelli & Halevi	2009	How top management team behavioral integration and behavioral complexity enable organizational ambidexterity: The moderating role of contextual ambidexterity	What is the TMT's role in creating OA?	Exploration / Exploitation	Organization	Contextual	Conceptual	Structural separation leads to OA through informal senior team (senior team social integration) and organizational (cross-functional interface) integration mechanisms. As organizational learning derives from individual learning, two intellectual capital architectures are developed to enable contextual ambidexterity. They blend human, social, and organizational capital and the related HRM systems to enable ambidextrous learning. Four success factors: Do an ambidextrous analysis of the business environment, create an ambidextrous organizational context, establish vision and consistency as important guidelines for leadership, and define innovation as a priority of the top management. Combining multiple dimensions can help to combine disparate forces of strategies, offering more growth opportunities while allowing the firm to maintain stability.
Güttele & Kontechnner	2009	Continuously Hanging by a Thread: Managing Contextually Ambidextrous Organizations	What are the idiosyncratic characteristics of contextual ambidextrous organizations and what are the methods of creating and maintaining this type of ambidexterity?	Exploration vs. Exploitation	Organization	Contextual	Qualitative	Structural separation leads to OA through informal senior team (senior team social integration) and organizational (cross-functional interface) integration mechanisms. As organizational learning derives from individual learning, two intellectual capital architectures are developed to enable contextual ambidexterity. They blend human, social, and organizational capital and the related HRM systems to enable ambidextrous learning. Four success factors: Do an ambidextrous analysis of the business environment, create an ambidextrous organizational context, establish vision and consistency as important guidelines for leadership, and define innovation as a priority of the top management. Combining multiple dimensions can help to combine disparate forces of strategies, offering more growth opportunities while allowing the firm to maintain stability.
Jansen et al.	2009	Structural Differentiation and Ambidexterity: The Mediating Role of Integration Mechanisms	Which integration mechanisms moderate the relationship of structural separation and firm ambidexterity?	Exploration vs. Exploitation	Organization	Structural	Quantitative	Structural separation leads to OA through informal senior team (senior team social integration) and organizational (cross-functional interface) integration mechanisms. As organizational learning derives from individual learning, two intellectual capital architectures are developed to enable contextual ambidexterity. They blend human, social, and organizational capital and the related HRM systems to enable ambidextrous learning. Four success factors: Do an ambidextrous analysis of the business environment, create an ambidextrous organizational context, establish vision and consistency as important guidelines for leadership, and define innovation as a priority of the top management. Combining multiple dimensions can help to combine disparate forces of strategies, offering more growth opportunities while allowing the firm to maintain stability.
Kang & Snell	2009	Intellectual Capital Architectures and Ambidextrous Learning: A framework for Human Resource Management	The goal is to establish a framework for studying how firms might achieve ambidextrous learning through managing human resources.	Exploration / Exploitation	Organization	Contextual	Conceptual	Structural separation leads to OA through informal senior team (senior team social integration) and organizational (cross-functional interface) integration mechanisms. As organizational learning derives from individual learning, two intellectual capital architectures are developed to enable contextual ambidexterity. They blend human, social, and organizational capital and the related HRM systems to enable ambidextrous learning. Four success factors: Do an ambidextrous analysis of the business environment, create an ambidextrous organizational context, establish vision and consistency as important guidelines for leadership, and define innovation as a priority of the top management. Combining multiple dimensions can help to combine disparate forces of strategies, offering more growth opportunities while allowing the firm to maintain stability.
Köllinger et al.	2009	Ambidexterity as an Innovation Strategy for Professional Service Firms (original: Ambidexertät als Innovationsstrategie für Dienstleister)	How can an ambidextrous innovation strategy be implemented in a professional service firm?	Incremental / Radical Innovation	Organization	Contextual	Qualitative	Structural separation leads to OA through informal senior team (senior team social integration) and organizational (cross-functional interface) integration mechanisms. As organizational learning derives from individual learning, two intellectual capital architectures are developed to enable contextual ambidexterity. They blend human, social, and organizational capital and the related HRM systems to enable ambidextrous learning. Four success factors: Do an ambidextrous analysis of the business environment, create an ambidextrous organizational context, establish vision and consistency as important guidelines for leadership, and define innovation as a priority of the top management. Combining multiple dimensions can help to combine disparate forces of strategies, offering more growth opportunities while allowing the firm to maintain stability.
Luo & Rui	2009	An Ambidexterity Perspective Toward Multinational Enterprises from Emerging Economies	How can emerging market multinational enterprises be conceptualized as ambidextrous organizations?	Co-competence / Co-orientation / Co-evolution	Organization	Structural	Qualitative	Structural separation leads to OA through informal senior team (senior team social integration) and organizational (cross-functional interface) integration mechanisms. As organizational learning derives from individual learning, two intellectual capital architectures are developed to enable contextual ambidexterity. They blend human, social, and organizational capital and the related HRM systems to enable ambidextrous learning. Four success factors: Do an ambidextrous analysis of the business environment, create an ambidextrous organizational context, establish vision and consistency as important guidelines for leadership, and define innovation as a priority of the top management. Combining multiple dimensions can help to combine disparate forces of strategies, offering more growth opportunities while allowing the firm to maintain stability.
Mom et al.	2009	Understanding Variations in Managers' Ambidexterity: Investigating Direct and Indirect Effects of Formal Structural and Personal Coordination Mechanisms	How is ambidexterity shaped at the managerial level and which organizational mechanisms are affecting it?	Exploration / Exploitation	Individual	Contextual	Quantitative	Structural separation leads to OA through informal senior team (senior team social integration) and organizational (cross-functional interface) integration mechanisms. As organizational learning derives from individual learning, two intellectual capital architectures are developed to enable contextual ambidexterity. They blend human, social, and organizational capital and the related HRM systems to enable ambidextrous learning. Four success factors: Do an ambidextrous analysis of the business environment, create an ambidextrous organizational context, establish vision and consistency as important guidelines for leadership, and define innovation as a priority of the top management. Combining multiple dimensions can help to combine disparate forces of strategies, offering more growth opportunities while allowing the firm to maintain stability.
Nemanich & Vera	2009	Transformational leadership and ambidexterity in the context of an acquisition	What are the effects of transformational leadership and learning culture on ambidexterity in acquisition integrations?	Exploration vs. Exploitation	Team	Contextual	Quantitative	Structural separation leads to OA through informal senior team (senior team social integration) and organizational (cross-functional interface) integration mechanisms. As organizational learning derives from individual learning, two intellectual capital architectures are developed to enable contextual ambidexterity. They blend human, social, and organizational capital and the related HRM systems to enable ambidextrous learning. Four success factors: Do an ambidextrous analysis of the business environment, create an ambidextrous organizational context, establish vision and consistency as important guidelines for leadership, and define innovation as a priority of the top management. Combining multiple dimensions can help to combine disparate forces of strategies, offering more growth opportunities while allowing the firm to maintain stability.
O'Reilly et al.	2009	Organizational Ambidexterity: IBM and Emerging Business Opportunities	Why is it, that many large successful organizations fail where some are able to adapt and survive?	Exploration / Exploitation	Organization	Structural	Qualitative	Structural separation leads to OA through informal senior team (senior team social integration) and organizational (cross-functional interface) integration mechanisms. As organizational learning derives from individual learning, two intellectual capital architectures are developed to enable contextual ambidexterity. They blend human, social, and organizational capital and the related HRM systems to enable ambidextrous learning. Four success factors: Do an ambidextrous analysis of the business environment, create an ambidextrous organizational context, establish vision and consistency as important guidelines for leadership, and define innovation as a priority of the top management. Combining multiple dimensions can help to combine disparate forces of strategies, offering more growth opportunities while allowing the firm to maintain stability.

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Pragne & Schlegelmilch	2009	The Role of Ambidexterity in Marketing Strategy Implementation: Resolving the Exploration-Exploitation Dilemma	Can the concept of OA also be applied on marketing dilemmas? What are tools and procedures to overcome marketing dilemmas and support strategy implementation?	Exploration / Exploitation	Organization	Structural / Contextual	Qualitative	Introducing a new categorization of ambidextrous approaches including peripatric ambidexterity. Depending on the 'form of ambidexterity, implementation mechanisms on a personal and organizational level are identified.
Konlechner & Güttel	2009	Continuous Change with Ambidexterity (original: Kontinuierlicher Wandel mit Ambidexterity)	What is the difference between structural and contextual ambidexterity? When is which strategy applicable and what are the specific challenges related to them?	Exploration / Exploitation	Organization	Structural / Contextual	Conceptual	Both, structural and contextual ambidexterity need structural and contextual factors. Factors concerning the organizational context contribute to the development of structural ambidexterity and structural arrangements facilitate contextual ambidexterity.
Sarkiss & Hulland	2009	Innovation and efficiency: It is possible to have it all	What are the benefits of pursuing a ambidextrous strategy? How can firms become ambidextrous?	Innovation / Efficiency	Organization	Structural	Quantitative	Pursuing an ambidextrous firm strategy has a positive effect on performance (revenues, profits, customer satisfaction, new product introductions), but is not influenced by industry.
Schulze	2009	Balancing Exploitation and Exploration: Organizational Antecedents and Performance Effects of Innovation Strategies	What is the impact of exploitation and exploration on organizational performance and which organizational design facilitates the balance between them?	Exploration / Exploitation	Organization	Structural / Contextual	Quantitative	Ambidexterity is positively related to organizational performance and can emerge from structural or contextual factors.
Simsek	2009	Organizational Ambidexterity: Towards a Multilevel Understanding	Multilevel analysis of the concept of organizational ambidexterity.	Exploration / Exploitation	Multilevel	Structural / Contextual	Conceptual	Propositions for future research: Including interrelated relationships (networks) and competitive environmental levels in future studies.
Taylor & Helfat	2009	Organizational Linkages for Surviving Technological Change: Complementary Assets, Middle Management, and Ambidexterity	What is the role of interorganizational linkages in technology transitions?	Exploration / Exploitation	Organization	Structural	Qualitative	Organization linking mechanisms promote ambidexterity by enabling firms to transition to a new technology while utilizing valuable preexisting capabilities. Middle managers play a crucial role in implementing these interorganizational linkages.
Uotila et al.	2009	Exploration, Exploitation, and Financial Performance	What is the relationship between the exploration / exploitation balance and firm performance and is there an influence of industry dynamism?	Exploration / Exploitation	Organization	Structural	Quantitative	There is an inverted U-shaped relationship between the relative share of explorative orientation and financial performance. This relationship is positively moderated by the R&D intensity of the industry in which the firm operates.
Zimmerman	2009	Organizational Ambidexterity: How to Plan, Design, and Manage Exploratory Initiatives in Incumbent Firms	How can managers actively design organizations for profitable growth and how can they foster exploration without jeopardizing exploitation	Exploration / Exploitation	Organization	Structural	Qualitative	Managers in ambidextrous organizations have to plan, design, and manage exploratory initiatives. Planning means deciding which type of exploratory search (local/distant and supply/demand), designing means creating structural context configurations ( autonomy/differentiation), managing means achieving knowledge integration.
Andriopoulos & Lewis	2010	Managing Innovation Paradoxes: Ambidexterity Lessons from Leading Product Design Companies	How do leading Product Design Companies manage the paradox of exploration and exploitation?	Exploration / Exploitation	Organization	Structural / Contextual	Qualitative	Paradoxes can fuel, as well as frustrate innovation. Innovation paradoxes require paradoxical innovation management approaches. Paradoxes guide a common managerial approach that enables contextual variations.
Boisjoly & Chermack	2010	Organizational ambidexterity: Integrating deliberate and emergent strategy with scenario planning	How can organizations develop ambidexterity and embrace both the deliberate and emergent properties of strategy?	Exploration / Exploitation	Organization	Contextual	Conceptual	Scenario planning can be a tool to achieve organizational ambidexterity in organizations.
Cao et al.	2010	Modeling the joint impact of the CEO and the TMT on Organizational Ambidexterity	How does the role of the CEO and the TMT impact organizational ambidexterity?	Exploration / Exploitation	Organization	Structural	Quantitative	CEO's network extensiveness is positively related with ambidexterity. This relationship is stronger when the communication richness between the CEO and the TMT is higher. Communication richness also has a positive main effect on OA.
Dover & Dierk	2010	The ambidextrous organization: Integrating managers, entrepreneurs and leaders	To develop and validate a measurement instrument that will allow to assess the managerial, entrepreneurial and leadership capabilities of key personal and the organization as a whole.	Breakthrough / Derivative Projects	Organization	Structural	Qualitative	Three major decision making archetypes can be distinguished: "Managers" (improve efficiency, risk averse), "Leaders" (facilitate change, risk taker+risk minimizer), and "Entrepreneurs" (activate change, risk taker). All three types are critical in guiding an ambidextrous organizations.

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Fang et al.	2010	Balancing Exploration and Exploitation Through Structural Design: The Isolation of Subgroups and Organizational Learning	Which is the optimal structure to maintain the balance between exploration and exploitation?	Exploration / Exploitation	Organization	Structural	Experimental	Moderate levels of cross-group linking lead to the highest equilibrium performance by enabling superior ideas to diffuse across groups without reducing organizational diversity too quickly.
Frank et al.	2010	Ambidexterity in family-owned firms: The top-management family as an innovation incubator (Original: Ambidexterity in Familienunternehmen: Die Top-Management-Familie als Innovationsinkubator)	How does the family-culture enable ambidextrous processes in an innovative family owned business?	Exploration / Exploitation	Organization	Structural	Qualitative	The management family serves as an incubator. Ideas are developed in a secure space and then introduced to the organization. No integration by the TMT the workflow is top-down. Exploration and exploitation are hierarchically separated.
Mahr	2010	Hybrid Strategy and Firm Performance: The Moderating Role of Individual and Technological Ambidexterity	Testing the moderating effect of individual and technological ambidexterity as a moderator for the hybrid strategy-performance relationship.	Exploration / Exploitation	Multilevel	Structural	Quantitative	The impact of hybrid strategy on firm performance is positive in the presence of organizational ambidexterity, while it is negative in the absence of organizational ambidexterity.
Proff & Haberle	2010	Limiting Ambidexterity through Consistent Dynamic Management (Original: Begrenzung von Ambidextre durch konsistentes dynamisches Management)	How can the costs associated with OA be reduced through systematic dynamic management?	Ressource Renewal / Ressource Consumption	Organization	Structural	Conceptual	Cost associated with OA are often overlooked. They root in the contradictions between organizational units and lead to coordination costs. A systematic consistent management can help to avoid these cost through limiting ambidexterity to situations where it is necessary.
Rosing et al.	2010	Ambidextrous Leadership in the Innovation Process	Explaining the importance of ambidextrous leadership in the innovation process	Exploration / Exploitation	Individual	Contextual	Conceptual	Ambidextrous leadership has to be ambidextrous itself. It has to switch between opening and closing leadership behaviors in order to enable exploration and exploitation at the subordinate level. Emotional intelligence and integrative thinking might be important aspects of an ambidextrous personality.
Sarkees et al.	2010	Ambidextrous organizations and firm performance: the role of marketing function implementation	Is the relationship between OA and performance mediated by functional implementation?	Exploration / Exploitation	Unit	Contextual	Quantitative	The ambidextrous firm approach significantly affects performance only when successful implementation of that approach is evident at the functional level.
Schmitt et al.	2010	M@n@agement in Times of Economic Crisis: Insights into Organizational Ambidexterity	What happens to ambidexterity if the often used premises of stable or growing economies is revised to an economic downturn?	Exploration / Exploitation	Organization	Structural	Qualitative	Economic crisis intensifies the dilemma of exploration and exploitation and in the same time cuts slack resources necessary for ambidexterity. In this case, contextual solutions do not seem to be favorable.
Schudy	2010	Contextual Ambidexterity in Organizations: Antecedents and Performance Consequences.	What enables contextual ambidexterity and what is the relationship towards firm performance?	Exploration / Exploitation	Organization	Contextual	Qualitative	Transformational leadership climate is a viable driver of contextual ambidexterity, all life aspects of collective personality are positively related to firm performance where this relationship is mediated by contextual ambidexterity.
Sifrits & Moenaert	2010	Managing the interaction of exploration and exploitation: Ambidexterity as a high order dynamic capability	Introducing a dynamic capabilities perspective to the OA concept.	Exploration / Exploitation	Organization	Structural / Contextual	Conceptual	OA can be seen as a high-order dynamic capability that balances exploration and exploitation. This is similar to combinative capabilities which help to overcome barriers of resource reconfiguration.
Tempelaar	2010	Organizing for Ambidexterity: Studies on the pursuit of exploration and exploitation through differentiation, integration, contextual and individual attributes	Gain insight in the way organizations may shape their pursuit of OA, by managing differentiation and integration across multiple organizational levels and contexts, in accordance with both internal and external demands.	Exploration / Exploitation	Organization	Structural / Contextual	Quantitative	Ambidexterity is a multilevel and nested construct. Internal social capital may facilitate the achievement of OA, its impact, however, is contingent upon attributes of external social networks. Team level ambidexterity is influenced by individual creative problem solving which is influenced by individual task autonomy. This relationship is moderated by a shared vision.
Tushman et al.	2010	Organizational designs and innovation streams	How do different organizational designs affect a firms ability to explore as well as to exploit?	Exploration / Exploitation	Organization	Structural	Qualitative	Ambidextrous organizational design are relatively more efficient in executing innovations streams than functional, cross-functional and spinout designs.

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Wollersheim	2010	Expiration and Exploitation as two Sides of the Same Medal. (Original: Exploration und Exploitation als zwei Seiten derselben Medaille)	How can the development of OA be fostered?	Exploitation / Exploitation	Organization / Structural	Structural	Conceptual	A framework which identifies three major determining factors of ambidexterity was developed. Organizational structure, organizational learning and organizational culture have influence. Different aspect of each foster either exploration or exploitation.
Bledow et al.	2011	Ambidextrous Leadership for Innovation: The Influence of Culture.	How can ambidextrous leadership behaviors contribute to innovation and how do cultural differences influence this relationship?	Exploration / Exploitation	Organization / Exploitation	Structural	Conceptual	Different cultures have strengths and weaknesses for innovation which have to be compensated or leveraged. Ambidextrous leadership takes different shapes depending on contextual conditions.
Datta	2011	Review and Extension on Ambidexterity: A Theoretical Model Integrating Networks and Absorptive Capacity	How do external and internal networks influence the ability of a firm to become ambidextrous. What is the influence and the interrelations of absorptive capacity?	Exploitation / Exploitation	Organization / Exploitation	Structural	Conceptual	Absorptive capacity, external and internal networks, and ambidexterity are highly interrelated. Both, absorptive capacity and networks are antecedents of ambidexterity while still inextricably linked.
Filippini et al.	2011	Ambidexterity and the evolution of knowledge management initiatives	What are the characteristics of knowledge management initiatives that enable ambidextrous learning, and how do they emerge and evolve?	Exploitation / Exploitation	Individual / Exploitation	Contextual	Qualitative	Knowledge management initiatives can help to create a context defined by rather guidelines and methods than by a definite purpose. The clear separation between purpose and learning routines creates a learning context that can be activated when necessary in ways required either by exploration or by exploitation.
Kostopoulos & Bozionelos	2011	Team Exploratory and Exploitative Learning, Psychological Safety, Task Conflict, and Team Performance	What influences different team-learning modes of exploration and exploitation and how are they related to performance?	Exploitation / Exploitation	Team / Exploitation	Contextual	Quantitative	Psychological safety is linear and non-linear related to explorative and exploitative learning. They are additively related to team performance.
Lin & McDonough	2011	Investigating the Role of Leadership and Organizational Culture in Fostering Innovation Ambidexterity	What is the role of strategic leadership in creating an organizational culture which promotes ambidexterity?	Exploitation / Exploitation	Organization / Exploitation	Contextual	Quantitative	Strategic leadership directly impacts acknowledge sharing culture which directly impacts innovation ambidexterity.
Luozo & Pasola	2011	Ambidexterity and total quality management: towards a research agenda	How do OA and TQM fit together? Can TQM be a base for achieving OA and vice versa?	Exploitation / Exploitation	Organization / Exploitation	Structural / Contextual	Conceptual	TQM can act as a platform to create an ambidextrous context. This does not work for structural approaches.
McCarthy & Gordon	2011	Achieving contextual ambidexterity in R&D organizations: a management control system approach	How could broader forms of management control be used to enable contextual ambidexterity in R&D organizations?	Exploitation / Exploitation	Unit / Exploitation	Contextual	Qualitative	A framework that shows how four types of control systems, each guided by a specific goal, combine to induce the behaviors, outcomes and control orientations (feedback vs. feed-forwards) necessary for contextual ambidexterity
O'Reilly & Tushman	2011	Organizational Ambidexterity in Action: How Managers Explore and Exploit	What are the managerial challenges arising when trying to implement organizational Ambidexterity?	Exploitation / Exploitation	Organization / Exploitation	Structural	Qualitative	Ambidextrous managers have to deliver a compelling strategic intent, articulate a common vision, follow a common-fate reward system, manage separate but aligned organizational architectures, and foster the ability of senior leaders to tolerate and resolve tensions.
Probst et al.	2011	Ambidextrous Leadership: Emerging Challenges for Business and HR leaders	How does leadership that enables OA work, and what are the challenges for leaders and HRM?	Exploitation / Exploitation	Organization / Exploitation	Structural	Qualitative	Ambidextrous leadership is shared across hierarchical levels and requires addressing tensions and managing contradictions throughout the organization.
Rosing et al.	2011	Explaining the heterogeneity of the leadership-innovation relationship: Ambidextrous leadership	What is the relationship between leadership and innovation and what leadership behaviors are needed to foster OA?	Exploitation / Exploitation	Individual / Exploitation	Contextual	Conceptual	Innovation in general is influenced by various leadership behaviors. In order to foster OA, aspects of different styles yielding either to a closing or to an opening behavior must be combined with the ability to switch between them.
Suzuki & Menché	2011	Optimal ambidexterity and exploration valueableness: balancing short-term and long-term trade-off in pharmaceutical products development	What is the optimal balance of resource allocation between exploitative and exploratory initiatives?	Exploitation / Exploitation	Organization / Exploitation	Structural	Quantitative	The optimal level of ambidexterity lies by allocating 1.5 times more development resources to exploitative product than to exploratory ones.

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Tushman et al.	2011	The Ambidextrous CEO	How can senior management teams master the tension between new and old?	Exploration / Exploitation	Organization	Structural	Qualitative	CEO's task for managing ambidextrous are: Engage the TMT around a forward looking aspiration, explicitly hold the tension, embrace the inconsistency by maintaining multiple and often conflicting strategy agendas.
Weibler & Keller	2011	Ambidexterity in Interconnection with Leadership Responsibility and Market Perception (original: Ambidexertität in Abhängigkeit von Führungsverantwortung und Marktwahrnehmung)	Does leadership responsibility affect individuals to show integrating behaviors and is this process influenced by their market perception?	Exploration / Exploitation	Individual	Contextual	Quantitative	Ambidexterity in individual work behavior rises with leadership responsibility as well as with perceived market dynamism.

## STATEMENT

### Selbständigkeitserklärung

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Rotterdam, 15.02.2012



BENJAMIN WÖRNER